Animal Geographies of Cattle: bodies spaces ethics

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84,134 words

Abstract

This thesis is concerned with developing animal geographies of cattle. Though the thesis signals attempts by geographers to recognize the presence of animals within practices previously understood as exclusively human (/social), I argue that there has been little discussion of how the agencies of animals might be theorized beyond their appearance as bounded nonhuman units. Consequently, this research forms part of a call for a disaggregation of non-human agency, a call, specifically, to articulate how individual cattle have particularities and complexities of alterity that dissect their placement into collectives. To enrich understandings of animal agencies, therefore, the thesis deploys a range of methodological practices: observation, sound recordings, photography, interviewing and textual analysis. Empirically seeking to research with and for animals rather than merely on them, I illuminate how individual cattle at an agricultural event I attended in May 2002 and living on a dairy farm in England have shaped the course of my fieldwork; determining the objects, bits and pieces that I have followed (i.e., pharmaceuticals, feed, bedding, hygiene and parlour equipment, crushes, stretch film, animal welfare and rights campaigns and policy-making). Binding these theoretical and empirical concerns with individual cattle together, this thesis offers important insights into crucial areas of concern in animal geographies - namely, to open up how animals might be encountered as *embodied* fleshy beings, to consider how animals co-constitute and re-constitute the fabric of material and virtual *spaces* and places, and thus to contemplate how human-animal *ethical* relations might be reconfigured.

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Some of these animals are gone now but they have made the research process ever so much more wonderful and indeed continue to provide the inspiration for my work.

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I declare that the work in this dissertation was carried out in accordance with the Regulations of the University of Bristol. The work is original except where indicated by special reference in the text and no part of the dissertation has been submitted for any other degree.

Any views expressed in the dissertation are those of the author and in no way represent those of the University of Bristol.

The dissertation has not been presented to any other University for examination either in the United Kingdom or overseas.

Signed: Jessicaselwood **Date:** 16TH JANUARY 2006

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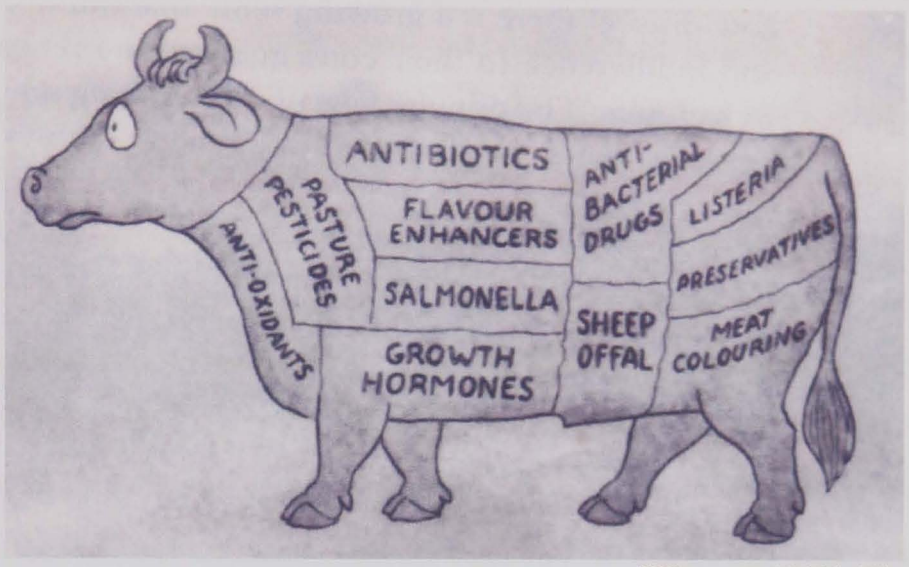

(Whatmore 1999b:10)

There is still something missing: a sense of animals as animals; as beings with their own needs, and (perhaps) self awarenesses, rather than merely as entities to be trapped, counted, mapped and analyzed; as beings whose lives are indelibly shaped by the uses that humans formulate for them, but whose fates from these taken-for-granted uses (along with the human rationales behind these uses) are almost never subjected to critical scrutiny (Philo 1995:657-658).

How difficult it still seems for us to peel back…and see the real animals that lurk within…animals have no means of challenging our misrepresentations…we need to learn to see them how they really are, not as we imagine them to be (Serpell 1996:825-826).

Animals have been so indispensable to the structure of human affairs and so tied up with our visions of progress and the good life that we have been unable to (even try to) fully see them. Their very centrality prompted us to simply look away and to ignore their fates…we have an intellectual responsibility as well as an ethical duty to consider the lives of animals closely (Wolch and Emel 1998:xi).

Figure i.ii: Mr and Mrs Big

(Photograph taken Tuesday 14 August 2001)

i.i Points of departure

This thesis is concerned with developing animal geographies of cattle. The quotations and images above conjuring up some of the themes and aspirations that are present in, and constitutive of, this thesis 'in-the-making'. The quotations, in particular, convey how animals[1] have been, and continue to be, investigated and of interest in the academy and beyond insofar as they impact upon the lives, interests and well-being of humans. Implicit in these accounts is a concerted awareness of how animals have found themselves woven through narratives about the environment, landscape and nature; configured and discarded as part of a (food) production process (figure i.i); mapped onto biogeographical regions and driven from their 'homes' by logging, mining, agriculture and urbanization (after Wolch and Emel 1998:xi); used for biomedical research, sport, tourism and so on. Importantly, the authors in these pieces examining how animals have been treated in academic geography: cleaved into a 'non-human' sphere, regarded as mute and inert matter and certainly denied lives of their own[2]. Above all, these papers signalling the illusory nature of human/animal purification in calling for animals to be taken seriously as living beings. What does it take to gesture towards animals, to "peel back the layers"? Is it possible for us, as humans, to remove ourselves from our centre of concern, to think of ourselves as living among and with animals? Crucially, how do animals see the world and their relations with humans? Together, these quotations, images and questions all taking on a new potency for me in illuminating how there are 'other' animal stories (waiting) to be told.

Over the last four years, then, I have sought, in various ways, to move on and extend this theme of taking animals seriously, indeed to recognize how animals lead all sort of lives and can do all sorts of things that unsettle and disturb human understandings about their place in the world (Whatmore 1999b). This endeavour reflects not only intellectual but also personal and political commitments that I want to acknowledge. Touching upon the everyday, the origins of the thesis can be traced back to a series of childhood experiences: of growing up in rural Wales; our frequent family outings to farms; having to walk through a field of cattle (occasionally falling into 'cow pats'!) on my way to feed 'Chip' (a horse); and through recollections of my 'toy cows' - 'Clarence' (a Jersey cow!) and 'Emily' (a Friesian cow), both of whom are boxed up and stored in my loft. In part, this research resonates in my wider concern for the well-being of animals; here I remember fondly school and university holidays and a 'gap year' spent volunteering at an animal shelter: cleaning out cat pens, being bitten by a white rabbit (named Biggles), feeding a goat and walking dogs.

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[1] I use the term 'animals' throughout this thesis to describe sentient beings that are not human. I do, however, want to signal the difficulty of using this term, its potential to conjure up speciesism, to be seen in opposition to the word 'human', and thus viewed as an expression of prejudice (Ryder 2000:2). With this in mind, I should like to make it clear that no inferiority is intended for I firmly believe that humans are animals too.

[2] For an alternative commentary of how academic geography has not been as 'deadening' as is being implied here do see Philo (1995 2005).

In some sense, this distinction between the personal and academic blurred as I undertook a Masters programme in Society and Space here at the University of Bristol. For in February 2001 Professor Sarah Whatmore, in a session on 'the environment', came to class and handed out a 'hybrid cow' diagram (figure i.i). What followed was a discussion concerning the way in which economic discourse and practice is made flesh, of how creatures become objectified as 'natural resources', and ethical questions about how this creature's bodily functions, social relations and life experience was changed. It was in this class, then, that I became aware of geographical and social scientific bodies of work on 'animals'[3]. This, and the taught session on crocodiles and wildlife networks that followed, led me to undertake a dissertation project on two rhinoceros iguanas known as Mr and Mrs Big (figure i.ii). Tracing how the spaces created for reptiles in zoological parks had changed over time, I became concerned with how Mr and Mrs Big used the enclosure provided for them, interacted with one another and others around them. Moreover, this led me to spend several weeks at the zoo over the course of one summer, shadowing the zookeepers, going into the enclosure - sometimes alone - to spend time with Mr and Mrs Big, watching them from the public gallery and following how visitors attempted to interact with them and how the animals responded. As I was conducting this piece of fieldwork I was applying for an ESRC doctoral studentship, and it was at this point that I decided to shift the orientation of my work from wildlife to cattle, these childhood experiences, 'hybrid' mapping of the cow and class discussion remaining with me[4].

From very different contexts, each of these encounters have shaped this research in all kinds of ways. For me, they serve as an ongoing reminder of the importance of spending time with animals and indeed acknowledging how animals determine what humans can and cannot do (being able to stroke Biggles, to enter Mr and Mrs Big's enclosure or to wander through a field of cattle). But looking back a number of loose ends, frustrations and anxieties concerning the ways in which academics were 'inviting the animals back in' (Wolch and Emel 1995) to geographical work began to surface that I wanted to address through my doctoral research. In essence, I felt (and still do), that geographies associated with human-animal relations often become stories about the human terms by which animals have come to be defined and the human practices and meanings that shape human relations to animals. Consequently, what can remain, then, is a decidedly 'human' geography that fails to contemplate and articulate animal relations of all kinds. This is not to say, however, that I doubt the potential validity of existing work in 'animal geographies', rather that I believe in forming understandings by "stirring some additional ingredients into the mix, [deploying] 'other' philosophical and methodological devices" (Philo 1992:193) and rethinking "some important and good things in some... older literature that is being too quickly just referenced and overlooked"

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[3] For an overview of 'animal geographies' see Philo (1995), Philo and Wilbert (2000) and Wolch and Emel (1995 1998).

[4] Please note: the archaeology of this project is taken up and worked through in chapter 3 (part 3.1). At the outset, however, I should like to make it clear that I owe my career as an 'animal geographer' to Mr and Mrs Big, whom continue to inspire and shape the kinds of journeys that I am taking.

(Philo 1997:19). In other words, my concern in developing animal geographies of cattle is to theoretically retrace some of the ways in which animals have been evacuated from geography, and methodologically to investigate how research might be animal-led, drawing on empirical styles and practices with and for individual animals rather than merely on them (after Chen and Trinh 1994). Thus, this thesis places at the forefront the urgency of rupturing existing accounts of *human*-animal relations by becoming attentive instead to *individual animals*[5].

i.ii Animalian traces

What happens as a consequence of countenancing animal lives, geographies and relations with humans? In what follows I want to explain the broader context of ideas (*four research themes*) that inform this conception of *animal*-human relations; and to advance a set of research questions that reflect this projects contribution to existing work in animal geographies.

The first theme is a theoretical engagement that situates *individual animals* as the focal point of the research. This trajectory is intended to hold on to theoretical accounts that register the relational and networked nature of human-animal relations (for examples see Callon 1986; Davies 1999; Hinchliffe 2001; Latour 1993; Thorne 1998; Whatmore and Thorne 1998 2000; Whatmore 2002), and to extend and unstitch such accounts. On the one hand, this is to acknowledge how relational perspectives have challenged the humancentrism prevalent in all manner of knowledge practices. On the other hand, I want to argue that there is something missing in these relational accounts - "a sense of animals as animals" (after Philo 1995:657) – for rarely, if at all, do individual animals emerge as "distinct subjects, worthy of epistemological, political and ethical distinction" (Jones 2003:293). To be clear, the journeys being undertaken here are working towards tackling this disregard for the individual by 'deconstructing' or 'dismantling' the sedimentation of animalian figures within relational approaches.

Following on, the second conversation exercised through the thesis is concerned with aspects of *fleshiness* and *embodiment* in opening up the relationship between the material and discursive make-up of animal bodies. This is important, for all-too-often existing work in animal geographies tends to reassert a 'thinking through the body' that places animals as 'body subjects' into generic containers amid historical, informatic and technological menageries. But I do not want to be misunderstood here, for this is not to ignore how cattle have been domesticated in ways that affect their genetic composition, bodily morphology and behaviour (after Anderson 1997); these matters, therefore, are

[5] These introductory frustrations and animalian orientation are more carefully set out in the preceding chapters (in particular, parts 1.4, 2.3 and 3.2).

of continued importance. I do, however, believe that there is more to come, that individual cattle have a fleshy animalness, a 'weighty materiality' (Longhurst 2001:5), that goes against the grain of (human) knowledge practices. By implication, augmenting the embodied lives of cattle in this way supplements various forms of bodily practice that embalm both the representational (generic compositions) and the non-representational (immediate experience ground out of the body, space to think about what is going on, and to realize that something else might happen).

The third engagement invites new ways of thinking about how animals can be seen as *co-constituents* of *place* and *space*. This is a movement away from the configuration of cattle into pastoral and productivist narratives (as part of the rural landscape, farming livelihoods or the heritage industry, for example), towards a contemplation of the pliable and disruptive presence (and absence) of animals in variable spatial contexts. In the first instance, this is to illustrate how cattle, as embodied beings, are influential in how places and spaces take and hold their shape in ways set apart from that of (prior) human assumptions and expectations. In the second instance, this is to trace how the fleshy attributes of cattle can be found inhabiting other (more) artificial and virtual spaces. These serve to map out how the everyday lives of cattle (and humans) constitute a mode of dwelling, as against building, in the world (after Ingold 1995).

Fourthly, and finally, these themes (individuality, corporeality and place/space) may create new points of departure and arrival in terms of *ethics*. For each theme invites new ways of attending to the lives of animals where they are not subsumed into the humanely orchestrated lives that have been designed for them. In particular, these efforts are directed towards resituating abstract ethical deliberations in moving towards practical ethical expertise (Jones 2003). Rather than welfare codes of recommendations or legislature, I am thinking here, for example, of everyday relations that play-out between a farmer and his or her cattle: checking, talking and stroking animals; how he or she might recognize and respond to a sick animal, a cow going through a difficult labour, or sending animals off to slaughter. But there is a sense, too, in which I want to hold on to how animals (cattle) circumscribe these encounters and subvert (human) ethical practices. Thinking again, here, of how individual animals may not respond to medication, carry on with a difficult birth or enter a lorry to be sent to the abattoir.

The outcome of this collection of themes is formalized through the following key research questions:

- What meanings of corporeality are woven into the lives of cattle and how do these understandings impact upon, and yet are disturbed by, the embodied agency of individual animals?

- How can cattle, in their everyday lives of different sorts, be seen to co-constitute and re-constitute places and spaces?
- What forms of ethical responsibility towards cattle are imposed and unsettled through these corporeal understandings and spatial relations?

i.iii A thesis 'in-the-making'

As I hope is becoming clear by now, my central concern in this thesis is how important questions about individual animalian (cattle) lives might be attended to without repeating the frustrations characteristic of much work on 'animal geographies'. In other words, how might these corporeal practices, spatial relations and ethical encounters offer a constructive critique of the networked and relational geographies project, and by extension the 'animal turn' of which it is a part? By way of a signpost, and to bring to a close this preface, I want to show something of how these research questions, and the emergent ideas and ambitions contained therein, shape the coming thesis; a thesis that is best seen as 'in-the-making' rather than as a finished or complete academic production.

Chapter 1 introduces and contextualizes some of the scientific, cultural and aesthetic lenses through which cattle have become known and understood by human societies at different scales, functions and institutional contexts. The first section, 'scientising cattle', outlines the historical origins of domestic cattle and discloses some of the ways in which scientific techniques have been drawn upon to transform and manipulate cattle, charting the implications of these techniques on the health and welfare of animals. In the second section, 'cattle as commodity', the chapter introduces bodies of work that discuss the various stages and processes through which animals are turned into food and other consumable items. The third and final part, 'cultural representation', considers the ways in which cattle have been portrayed in popular culture. On the one hand, the chapter is concerned with how cattle have been discursively placed within a broader set of academic literatures and, importantly, how the lives of cattle are changing as a result of human intervention. On the other hand, a number of frustrations with these accounts are highlighted. Specifically, cattle appear central to, yet often written out of, these accounts as a series of dichotomies are enacted (human/animal, production/consumption, subject/object) that lead humans to build remnants of a pristine past and debate the role of anthropomorphism in scientific research and artistic work. It is through a contemplation of these issues that this thesis emerges as an attempt to see if alternative narrations of cattle might be (re)discovered. How can geographers offer a way out of this bind - these practices of knowing and objectification that position the figure of the human as a foundation and explanatory tool?

The five sections of *chapter 2* attend to this question by examining some of the theoretical ideas that underpin the scientific (resource), commodified (food) and cultural (art work) narratives disclosed in chapter 1. Essentially, chapter 2 engages with bodies of work that converge through conversations about human-animal relations. The first section 'ecology' highlights how ecologists emphasize individual organisms in their environment as a focal point of research, ideas that I wish to pursue in latter chapters of the thesis. In the second section three bodies of work that have been drawn upon by geographers as a set of coordinates for exploring animality are outlined: actor-network theory, kinship and hybridity. The third section seeks to highlight the gaps in these literatures, fractures that I believe lead many aspects of human-animal relations to be ignored, forgotten and overlooked. In particular, the ontologies being worked through here remain concerned, first and foremost, with collectives, networks and naturecultures rather than animals per se, in ways that lead animals to become dissolved (ecosystem, hybrid, trope) and pushed through analytical vocabularies (organism, actant, hybrid). With this in mind, the remainder of the chapter outlines two bodies of work - 'dwelling' and 'non-representational theory' - to conceptualize how individual animals, as embodied beings, leave their marks and traces through the fabric of places. Through all of this, how might one glimpse the lives of individual cattle as living, fleshy beings?

Chapter 3 elaborates the ways in which I sought methodologically to work from this individual animal standpoint. The chapter begins by describing, and critically appraising, the methods that animal and social scientists have called upon in researching human-animal relations. Following on, the chapter alludes to empirical moments and theoretical literatures to emphasize the pivotal role that Margaret (a cow), and other individual cattle, have made in selecting the places and things that I have researched; signalling the ethical issues that have emerged from the empirical journeys taken. The chapter concludes by contemplating how the individual animals that have become part of the research process might resonate through this written document. How far can one go in implicating oneself into the lives of cattle? And how can their animalian lives and ways of being in the world be rendered meaningful in ways not solely on human terms?

With these thoughts and questions in mind, each of the chapters that follow take a different theoretical theme and develop this through grounded, empirical research. These chapters might be read as stand-alone pieces in discussing how individual animals make their presences (and absences) felt in geographies of everyday (human and animal) life; or, these chapters might be read in a thematic way, setting in motion the theoretical currents outlined in chapters 1 and 2 through imprints of (animalian) bodies, spaces, and ethics; or, as a layered and textured journey, attending to the ethical spaces and practices in which animal lives are caught up.

Thus, *chapter 4* is organized around three body-practices: breeding, milking and feeding. Each section begins by recounting an everyday moment in the life of one of the animals on Folly Farm. The chapter describes some of the materials that make a difference to these animalian practices (frozen sperm, parlour equipment, concentrate pellets), illuminating how the animals themselves, through their life patterns, rhythms and behaviours, respond to and disturb the properties of these materials and associated reproductive, milking and dietary knowledge production. In this way, the chapter makes a movement away from 'body as flesh' towards 'fleshy bodies'.

Following on, *chapter 5* considers the role of cattle in the shaping of habitats, places and landscapes. The chapter is about how cattle move in, through, and out of places as part of an attempt to grasp the ways in which animals live in the world and how their experiences in this world unfold and exceed the (physical) boundaries and (assumed) boundedness of Folly Farm. The chapter outlines four empirical settings: field, agricultural show, laboratory and tracing system, mapping how individual animals go about co-constituting spaces and places through their interactions with humans, other animals, and objects. Extending ecological insights and theorizations of dwelling articulated in chapter 2, this spatial tangle opens out important questions about what it might mean to be an animal and dwell in the world, and for humans leads one to query how the environments that cattle inhabit be taken up.

Each of the chapters presented in the thesis traverses an array of ethical matters. It is *chapter 6*, however, that consolidates this work by thinking through what makes 'us' human and how humanity might live 'rightly' or 'morally' with animals in the world. The chapter begins by acknowledging how animals have (traditionally) been excluded from the moral community before moving on to chart (contemporary) 'non-anthropocentric approaches' to ethics, explicating work on inter-subjective relational forms of ethical agency. Then, secondly, in 'orthodox locaters', the chapter sets out how animal welfarists and rights advocates have focused on farm animal welfare and the discursive politics that frame what is considered to be good or bad, humane or inhumane treatment of cattle. It is in the third and final part of the chapter, however, that empirical research with individual cattle at Folly Farm (and in other places) is offered to present accounts of ethical practice that take the form of a series of (everyday) encounters in ways that point towards very different questions than those raised in existing ethical literatures. The call here is to cultivate an ethic rooted not only of the other, but also for the other (after Cloke 1999): to contemplate what cattle experiences of welfare might be and how individual cattle might 'converse' in what happens to them in ways that bear upon their treatment and in how they live out their lives.

These chapters are followed by some *concluding thoughts*. Following a summary of the thesis, the conclusion draws out three key implications. Firstly, a continuing need to modify empiricism within

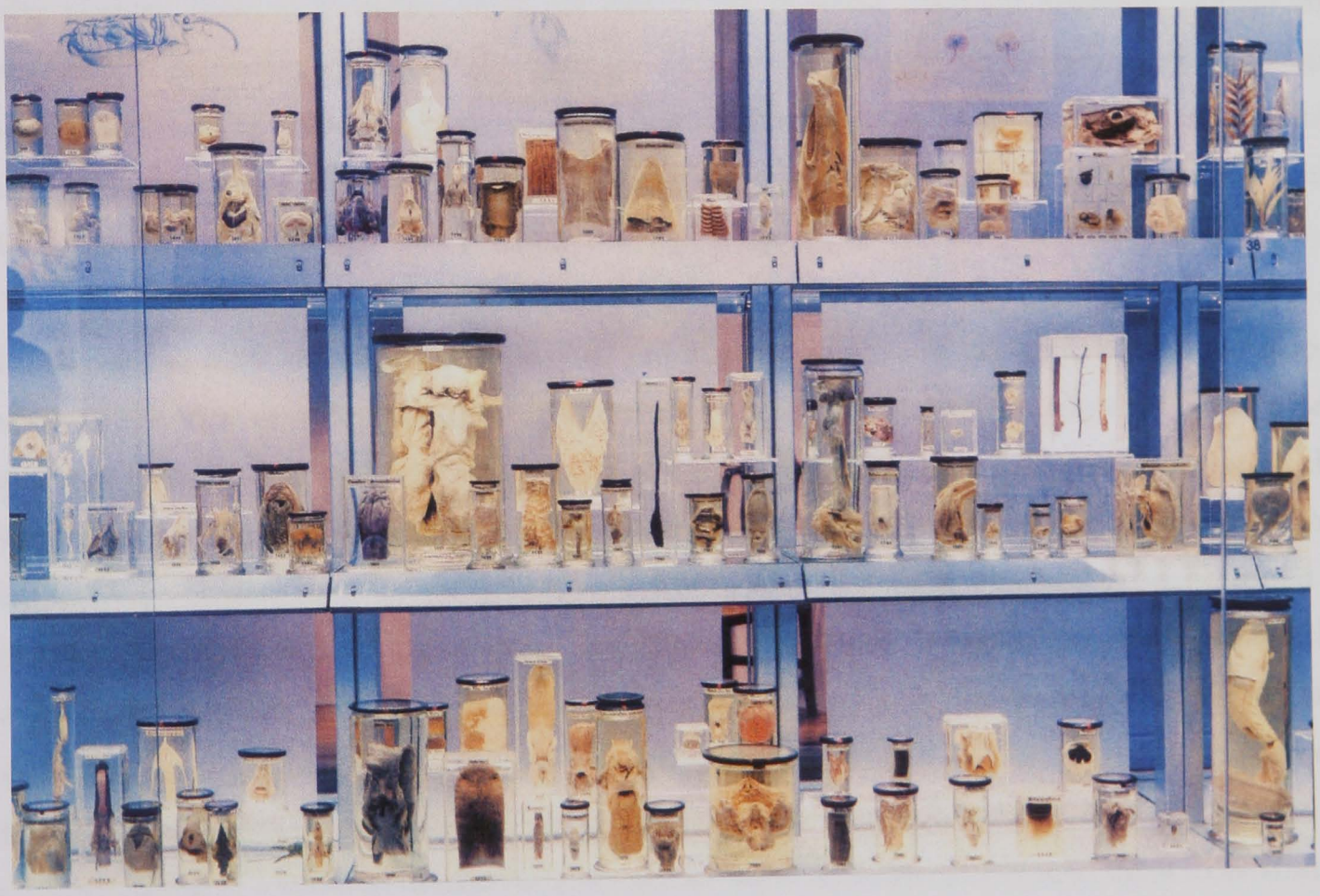
geographical and social scientific work by thinking through how to research *with* and *for* animals rather than (solely) *on* them. Secondly, a commitment to thinking through this empirical concern in a conceptual way by theorizing human-animal relations according to individual beings. Thirdly, an insistence that the lives and living (and dying) places and spaces of individual animals have an ethical resonance that is grounded and practical rather than external and abstract. Taking these points together, much broader issues are thus raised, for in illuminating how cattle lead all sorts of lives and can do all kinds of things, the thesis forms part of a call for academics to be more experimental in the '*animal* geographies' being excavated. For cattle may occupy the biological designations *bos* and *taurine* but, as I seek to show in the chapters that follow, their lives are so much richer and mysterious than such a given taxonomy suggests.

1. Human Knowledges, discourses and interventions in cattle lives: biological processes, visceral connections, artistic practices.

1.0 Introduction

Is it possible to make a poetics of spleen kidney and tongue?
(Deborah Levy, diary of a steak, 1997:11)

Figure 1.1: Jars of Spirit



(Broomberg and Chanarin 2005:24)

It was during a visit to The Hunterian Museum that I came across this collection of anatomical artefacts (figure 1.1). The installation itself forms part of an exhibition charting the history of surgery over the past three hundred years; with row upon row of organs and specimens all preserved in formaldehyde - deriving from humans, eagles, whales, elephants, camels, baboons, anteaters, zebras, lions, leopards, horses and cattle; for me this display seemed to capture what I want to discuss in this chapter. On the one hand, the installation is steeped in history, of a desire to understand the workings of the (human) body - the jars representing biological specimens to be mapped with the aim of probing nature's secrets and elongating life. On the other hand, the

installation becomes a cultural laboratory in unravelling the relationship between anatomy and art. For as one tours the museum, approaching the arrangement of jars (the mad, the weird, the acceptable, the beautiful and, perhaps, the shameful), I am reminded of the work of Damien Hirst whom, some 350 years later, follows this tradition of unlocking 'secret' workings of the body through dissection and preservation. This desire, to explore bodily form underneath the skin rather than above it, exemplified in Hirst's sculptures of a rotting cow's head, malformed calf, pig and tiger shark. From this, the discussions through this chapter open out the links between science (museum) and art (gallery); between the representational (dissecting, cataloguing, displaying – cattle tongue) and biological (illness, disease – six legged calf – survival); and between perfect (cattle body) and botched (malformed calf) taxidermy.

This chapter, then, in stemming from my visit to the museum - and the scientific, cultural and aesthetic sense-making architecture that it deploys – presents an overview of how the representations and realities of cattle are being fabricated by humans. In this way, the starting points come in excavating how these three areas of thinking (or lenses) are changing and enveloping cattle with different meanings and orderings that encompass a range of real and imaginary spaces.

In the first section, *'scientising cattle'* I outline the historical origins of domestic cattle and disclose some of the ways in which scientific techniques have been drawn upon to collect data, manipulate and transform these animals. Secondly, in *'cattle as commodity'* I introduce literatures that discuss the various stages and processes through which animals are turned into food and other consumable items. In the final section, *'cultural representation'*, I consider the ways in which cattle are portrayed in popular culture. In each of the sections two lines of enquiry are pursued. The first describes the modes and practices through which cattle become 'known' at different scales, functions and institutional contexts: how do people construct cattle and determine what they do? The second investigates the ethics and politics unfolding in these discourses and contexts: how are the lives of cattle changing as a result of human intervention and how do humans condition them to be treated in particular ways?

Above all, my intention in this chapter is to position the thesis within a broader set of academic fields, from medicine to art, to emphasize how cattle are often central to, yet written out of academic territory. I want to stress how the figure of the human remains the foundation and focus of these disciplines, for cattle may indeed be integral to the debates taking place but are recognized only insofar as they affect human lives. Through all of this, the movement of the thesis is towards problematizing this knowledge production by illustrating how cattle – as living fleshy beings - cannot solely be 'fitted in' to human discourses, but leave their imprints in human lives and spaces in ever more intimate and capricious ways.

1.1 Scientising Cattle

In this section I outline some of the ways in which science, as a mode of knowing, constructs cattle. Specifically, I want to consider how cattle are materialized in particular ways - from statistical equations to anatomical charts - and how this visibility is determined by a homogeneous set of methods and standards. I begin by looking at the process of domestication and the ways in which cattle function in human lives, bred and engineered as 'products'. I then move on to highlight some of the animal health issues that arise from these productivity narratives. Finally, I discuss how science is applied in drawing up codes and recommendations for farm animal welfare. How is science used to speak of and for cattle?

1.11 Production

Domestic cattle belong to the genus *bos* and are part of the *taurine* group. Fossil remains of animals resembling the cow have been found in Asia dating back between three and four million years (Blakely and Blade 1979). It is thought that cattle were first domesticated between six and eight thousand years ago, but bones discovered in East Africa suggest that husbandry may have been practiced up to fifteen thousand years ago (Campbell and Lasley 1985). But what is domestication and at what point does an animal become domesticated in ways that set it apart from its wild progenitors?

Despite a growing corpus of literature on animal domestication, debates about its origins persist (Anderson 1998). On the one hand, it has been attributed to natural factors, as part of an evolutionary process (Ellen 1994); on the other hand, theorists propose that it is the result of cultural factors including ritual sacrifice (Sauer 1969). Uncertainty also surrounds the role that cattle played in their early relationships with humans, in particular the extent to which they were relied upon for physical products (food and fuel) and their performance of more intangible roles (symbols of wealth and prestige) (Uerpmann 1996). There is also no consensus regarding whether domestication marked humanity's transcendence from nature (Rodrigue 1992), was intended to bring the animality of humans under control (Ingold 1994b 1996), or whether these human-animal relations were co-evolutionary (Zeuner 1963) or even a self-conscious choice by the animals themselves (Budiansky 1995).

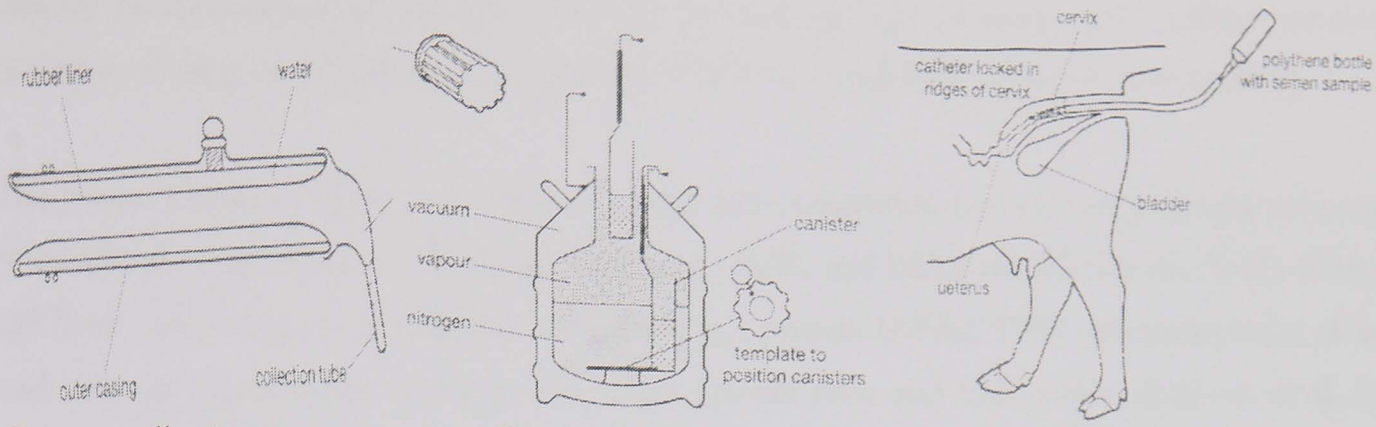
What all of these literatures have in common is an agreed understanding that domestication is a process by which captive animals adapted to humans and the environment that they provided (Price 1999). For this process to take place two conditions needed to be fulfilled. Firstly, the establishment of permanent settlements which both tamed animals to live in close proximity to humans thus

leading to their spatial confinement through fencing and wire (Uerpmann 1996). Secondly, the growing of crops to provide animals with an adequate food supply (Clutton-Brock 1981). Once tamed, a process of controlled breeding for efficient milk and meat production took place. On the one hand, castrating bulls was shown to be a particularly useful physiological aid to increasing their size and weight (Clutton-Brock 1994) and the desire to produce animals with uniform characteristics was led by the work of breeders such as Benjamin Tomkins, Richard Bakewell and Charles Colling with the improving stock recorded in herd books (see Walton 1984). On the other hand, emerging sanitary discourses concerning the impact of trading and killing cattle in urban areas (Franklin 1999; Philo 1995), accompanied by the development of a rail network (see Cronon 1991) and processes of pasteurization and refrigeration (Atkins 1977), meant that it was no longer necessary to confine cattle to living in and around human settlements.

As cattle became part of a more 'efficient and controlled system', spatially and technologically, production became an experimental science. In this way, scientists began to study the anatomical structure and physiological functions of cattle to further improve yields and profits (Franklin 1999). Two aspects of these investigations were significant: the development of reproductive technologies and the advancement of feed science.

Scientific understandings of the reproductive systems of cows and bulls are drawn upon to ensure the production of the next generation of reproductively viable offspring (Fraser 1971). In the early stages of domestication this would have been through natural service today, however, most reproduction is performed by artificial means. The first large scale use of artificial insemination techniques took place in Russia in 1931 when 19,800 cows were bred (Webb 1992:1). Techniques used today (illustrated in figure 1.2) allow semen to be collected from a bull using an artificial vagina and enable between three hundred and one thousand cows to be inseminated from a single ejaculation (Boothby 2001).

Figure 1.2: Artificial Insemination

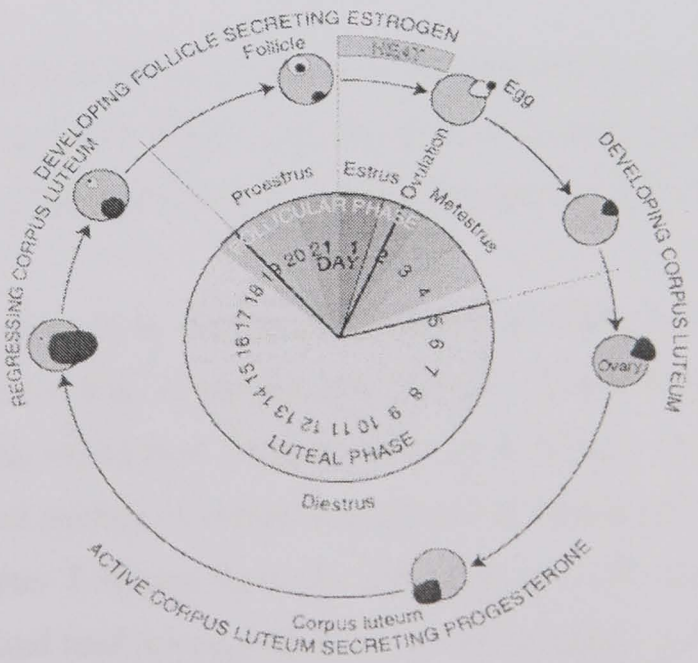


i.Semen collection ii.Semen storage iii. Insemination.

(Barnes 1995:38-39)

To determine when insemination is likely to be viable, reproductively and economically, requires an understanding of the cow's reproductive cycle (figure 1.3). This cycle, known as Oestrous, may begin as early as five months of age and is complete by twelve months of age (Britt et al, 1986). It is the 'estrus' phase of this cycle, a 10-25 hour period, that marks the optimum time for semen deposition (Peters et al, 1984).

Figure 1.3: The Oestrous cycle

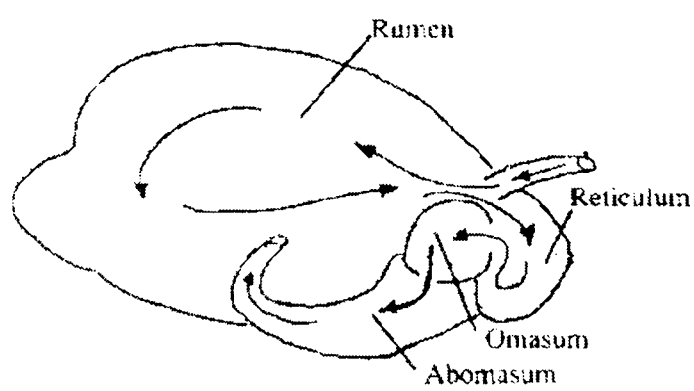


(Wattiaux undated: 3)

In some way, however, the reproductive systems of cow and bull mapped out here are no longer trapped within these functional and hormonal life-stages. For the internal physiology of cattle is subject to reconstitution through technical advances in sperm-sexing, the cryopreservation of embryos, cloning and biopharming (Appleby 1998; Peters and Ball 1996; Lanza et al, 2001).

The proper nutrition of cattle is seen as another key component in a successful production system. Statistical measures such as Metabolizable Energy (ME) and Metabolizable Protein (MP) (Fox et al, 1992) are used to provide estimates of the energy, protein (AFRC 1993), minerals, trace elements and vitamin requirements necessary for target growth rates and milk yields (Baldwin et al, 1997). Cattle have a digestive system which consists of a four chambered stomach (figure 1.4).

Figure 1.4: Flow of digestion in ruminant stomach



(Hamilton 1991:2)

The rumen is an important organ because it is where the fermentation acids are produced and feed utilized for use by the rest of the body. The objective of drawing upon mathematical models, therefore, is to provide for a rumen environment that maximizes microbial production and growth.

While scientific advances have been successful in increasing yields, Bendixen et al. (1988) have identified a correlation between high levels of productivity and deterioration in the health of animals. Prior to domestication cattle would have actively taken care of their health, utilizing available plants (Burne 2002). Domesticated animals, however, are dependent on humans to treat their ailments. In the next part of the chapter I discuss how the principles of uniformity and homogeneity that reproductive technologies and feed sciences adopt impact upon animal and human health.

1.12 Health

One of the most comprehensive definitions of animal health has been provided by Broom and Johnson (1993:8) whom argue that health is:

> the absence of disease or injury... the presence of robust characteristics... the animal's ability to cope with the environment. It means that skeletomuscular, cardiovascular, neurocendocrine immune systems are operating at optimal capacity. The word 'optimal' implies balance among the animal's regulatory systems to achieve equilibrium.

This interpretation points towards how the quality of an animal's health is determined by the animal's state (physiology, behaviour, immunology) and physical features of the farm environment. In this way, if productivity gains such as milk production or muscle growth are not balanced with the environment, this can lead to a deterioration in health. In dairy cattle, for example, a condition known as Mastitis has been associated with high levels of milk production. This ailment, contracted by approximately 37% of the U.K dairy herd (Kossaibati et al, 1998), leads to inflammation of the udder and mammary gland resulting in swelling, increased rectal temperature, lethargy, milk of an abnormal appearance and even anorexia and death (Harmon 1994). And in beef cattle, the production of double-muscled animals selectively bred for lean meat has left some cattle so muscle bound that they cannot run, and are only able to walk with great effort. Belgium Blue cows, for example, commonly suffer from Dystocia, this is where the calf is too large for the animal to give birth naturally and a caesarean needs to be performed (Price 1999). It is hoped that these conditions may be alleviated using techniques drawn from the human genome project by enabling the genes responsible for specific traits or diseases in cattle to be identified (Farber and Medrano 2003).

The definition above further signals scientific, and public, wariness of the perverse rationalities of domestication, epitomized by industrial practices of animal husbandry. On the one hand, the quality of meat and milk of cattle origin has become an increasing issue for consumers since the announcement in March 1996 of a possible link between new variant Creutzfeldt Jakob Disease (vCJD) in humans and eating infected beef. More recently, the European Union has begun phasing out and banning the use of growth promoting antibiotics on food producing animal species because of concerns that residues may remain in food (Botsoglous and Fletouris 2001). However, apprehensions have been expressed that the sudden withdrawal of these drugs has led to deterioration in animal health; increasing incidences of diarrhoea, weight loss and even mortality (see Casewell et al, 2003).

On the other hand, the potential of farm animals to improve human health is growing. In this regard, cattle are being used to model diseases such as Multiple Sclerosis (Griggs 2002) and for pharmaceutical production; in the manufacture of functional foods including designer milks that

have a longer shelf life and ice-cream that does not crystallize (Bolland et al, 2001); and are contributing to solving environmental problems in reducing greenhouse gas emissions (Simkin 2001 see also McKie 2004). And yet as cattle become new medical hope, perfect food, or environmental enhancement, ethical questions about their role across these different arenas – the biological practices, their conditions of existence, the breeding failures and genetic abnormalities – remain unexplicated.

So far I have explored the shifting relationships between humans and animals, from the origins of domestication to the emergence of a productivist rationale underpinning farming practices. I have also indicated how making cattle useful for human purposes can lead to the neglect of the animals themselves. I want to end this section by discussing some of the issues raised by scientific understandings of animal welfare: to what extent do veterinarians address the neglect previously encountered? How is science used to speak of and for cattle in debates surrounding their welfare?

1.13 Welfare

Bennett (1995) conceptualizes the benefits of providing for the welfare of farm animals as a trade-off for society between animal welfare and animal productivity. In economic terms, the values of animal welfare are negative and represent unmitigated costs to producers and consumers (Tweeten 1991). Why, then, is animal welfare pursued? It is certainly important to the animals themselves. Webster (1995), for example, describes how a high producing dairy cow yielding 28,000 pounds of milk per lactation has a work rate equivalent to a human jogging for six to eight hours continuously. Such a metabolic load puts a considerable strain on the animal which must be sustained for months at a time, and even whilst pregnant. But what do we mean by 'animal welfare' and what role does science play?

Science, it is argued, is used to develop a rational, sympathetic and unsentimental approach to welfare (see Broom 1988) and through various methods develops concepts to assess the animals needs and determine to what extent these needs can be met. Animal welfare has been defined as "the physical and psychological state of an animal as regards its attempt to cope with its environment" (Broom 1993:15). Scientists, then, study the critical attributes of the production environment that, when not provided, cause varying degrees of distress and suffering to animals. The welfare issues addressed in relation to cattle include (but are by no means limited to): systems of animal husbandry (Wechsler 2005), markets (Lewis and Hurnik 1998), transport (Swanson and Morrow-Tesch 2001) and slaughterhouses (Grandin 1998). Within these different settings conventional scientific approaches monitor behavioural changes (signs of aggression and repetition), physiological indicators (evidence of hunger, thirst, fatigue and injury) and pathological indicators

(animal reactions to restraining, handling and novelty) (Broom 1991; Fraser and Broom 1996). Here, methods of asking animals questions about what they want are developed through operant and preference tests (Faull et al, 1996; Johnson 1996). In this way, science determines welfare in relation to what is present and can be accurately documented and measured.

For some scientists (see Rollin 1999; Smuts 2003) this conventional approach needs to be widened. They argue that rather than being concerned with what makes an animal do what it does in making a choice, we should look at how this choice affects an individual animal (Duncan 1993). The call here is to move away from the often mechanistic approach of conventional science, to work more closely with animal owners (Mill and Ward 1993) and develop holistic, individual and whole animal approaches (Nicol 1996; Wemelsfelder 1993 1997). But what then is the benchmark against which scientists measure welfare? Both of these approaches compare the behaviour of domestic animals with that of their wild relatives (Johnson 1996) and their physical environment to the habitat of their ancestors (Price 1999 see also Musschenga 2002:179).

Kilgour (1985) describes how, in the 'wild', cattle would travel approximately three miles a day, spend up to two hours searching for suitable grazing sites and forage for up to nine hours in three major bursts. How can these ideas be reconciled with reproductive technologies that deny cows and bulls the ability to control their biological and genetic destinies (part 1.11)? Most significant, perhaps, are notions of 'de-animalizing' cattle so that they feel no pain and experience no distress (Buller and Morris 2003). How can these developments be compared to the lives of 'wild' *bos* and to what extent are they intended to improve the welfare of domesticated cattle?

It is the veterinary profession who find themselves traversing the line between production and welfare, in a practicing environment where the interests of the animals are not necessarily compatible with those of the owners. Rollin (1999) asks if the ideal model for the vet is that of a car mechanic or paediatrician - 'what does the vet see when presented with an animal patient - a clinical case that needs attention or a sentient creature that is suffering and needs help?' The Broom (1993:15) definition above suggests that 'welfare' is the property of the individual and refers to the quality of life that is lived (see also Broom 1988). However, studies (see Paul and Podberscek 2000) have shown that during veterinary training students experience a degree of hardening and detachment that, once qualified, means they are more likely to forget individual animals when treating herds. As a result of these concerns there have been calls for welfare to become a discipline in its own right and for the veterinary curriculum to include courses in philosophy and ethics (WSPA 2003a see also Fernandes 2005; Mitchell 2005). Once qualified vets find themselves working in a 'service industry' with the client pressure and charging of fees that this entails: what if the animal is not worth the cost of the treatment? Are vets mediators for animals? Should the

veterinarian try and save an animal's life or euthanize the patient? Making judgments in these clinical situations is not always straightforward.

It is not only the veterinary profession, but also societal demands that can be influential in prescribing welfare. This can lead to an incompatible relationship between what consumers demand and what the scientific advice points towards. For example, the public have expressed concern about the welfare of beef cattle kept on slatted floors even though scientific evidence indicates that the welfare of the animals is not significantly compromised (Scott and Kelly 1989). In this way, it is the rational approach that science configures that is drawn together in codes and recommendations such as the 'five freedoms' drawn up by the Farm Animal Welfare Council (FAWC). These 'commonsense freedoms' (see Johnson 1996:56) include: freedom from hunger and thirst, discomfort, pain-injury and disease, fear and distress, and the freedom to express natural behaviour (FAWC 2003). More recently, U.K legislation has recognized farm animals as 'sentient beings' (CIWF 2003). But there are misgivings about these frameworks. With regard to the five freedoms, Buller and Morris (2003:231) argue that they represent a socially cast threshold of animal well-being by defining the factors that condition welfare rather than considering an individual animal's point of view. Furthermore, three of the freedoms (hunger and thirst, discomfort, injury and disease) are not considered welfare issues at all as they correlate with the productivity of the animal and are therefore more likely to be attained (see Buller and Morris 2003:230-233). And finally, the extent to which these freedoms are integral to legal frameworks and working environments is debatable. Regarding the recognition of cattle as 'sentient beings', that is, the understanding that animals have feelings that matter and are more than commodities (after Webster 1995), the challenge once again is to see how this term is translated in practice.

Are the five freedoms and the notion of sentiency driven by production rather than cattle per se? Ultimately, one can only assess the animals point of view with reference to human standards (Johnson 1996). Therefore, through these scientific indicators and debates we can only say that we have considered the point of view of cattle insofar as we, as humans, have determined what that point of view is, what their needs are and how these might be fulfilled. The animal, I would argue, remains a resource rather than a living fleshy creature as humans take control of its environment and extract its compliance in this environment while maintaining that this is in the animals interest. To what extent do such categories enforce the idea that cattle are not us and we (as humans) are not them? The possibilities surrounding 'de-animalization' make answering such questions ever more complex and disjointed.

1.2 Cattle as commodity

Tell me what you eat, and I will tell you what you are
Jean Anthelme Brillat- Savarin (1755-1826)
cited in 'The physiology of taste' (1994).

In the last section I highlighted how treating animals as mere things can be incompatible with the psychological and social requirements of the animals themselves. Food scares such as Bovine Spongiform Encephalopathy (BSE) and Foot and Mouth Disease (FMD) have done much to bring farm animal welfare to the attention of the public. These crises emphasize the ways in which farming is practiced in the U.K and in so doing demonstrate how we are dependent upon a large number of unseen others in the agricultural industry and that our willingness to consume products such as meat largely hinges on trust (Franklin 1999), bodily health and lifestyle practices (Macnaghten 2003).

What has emerged out of these anxieties is a new consumption politics of food (see Beardsworth and Keil 1997) as consumers question and resist the industrial appropriation of food (Buttel 2000; see also Rifkin 1993). This desire to 'eat with a clear conscience' has been accompanied by a growth in the sale of organic produce (Soil Association 2005), an expansion in farmers markets, the development of blueprints that ensure certain production standards are met (figure 1.5), and an increase in the number of people adopting a vegetarian lifestyle (Vegetarian Society 2005).

Figure 1.5: RSPCA 'freedom food' advertisement

Everyday Ethics

ADVERTISEM

Because Freedom Food members are assessed regularly, whether you buy Freedom Food products in Cornwall or Caithness you know every one comes from a farm where animal welfare is a high priority.

And farm animal welfare is important to chefs too. Cookery writers as diverse as Antony Worrall Thompson, Marguerite Patten, Prue Leith, Sophie Grigson and Peter Gordon support Freedom Food and have created recipes especially for the *Freedom Food Celebrity Recipe Collection* (£3.99). They want to improve conditions, and believe British consumers can 'vote with their feet.' As James Martin says: "It is not enough just to say we support welfare for farm animals, we must turn our words into actions. Just look for and buy higher welfare products like Freedom Food – that's all it takes."

Look out for the Freedom Food label, and you'll know you're onto a good thing – better for your conscience and better for the animals.

In a climate of continual food scares, we all want to eat healthy food that's ethically produced at a fair price.

But sometimes simply understanding the labelling on food requires a course in code-breaking, as manufacturers continue to use emotive words and countryside imagery that conjure up a rural idyll to suggest their products are healthier, fresher and nicer than their rivals. However, many of their claims aren't worth the plastic they're printed on.

If you want to ensure that what you're putting on your plate really is more humanely produced there's a simple answer: look for the Freedom Food label. By choosing from the wide range of Freedom Food products, available at most supermarkets, you can help make a real difference to how animals are reared and food is produced. The power's in your basket.

Freedom Food is the RSPCA's farm assurance and food labelling scheme, which operates independently of the food industry. Around 2000 farms, hauliers and abattoirs, large and small, are part of the scheme. All have their premises and animals assessed annually by Freedom Food – there's a set of RSPCA standards for all the main farm animal species, from laying hens to beef cattle to salmon.

If the conditions meet the RSPCA welfare standards then food produced can display the distinctive Freedom Food logo. In addition, each year, RSPCA farm livestock officers carry out random spot checks on at least 30 per cent of members to help ensure that the higher standards expected of producers are maintained. It's a scheme that benefits everyone. For example, Loch Duart, a Scottish salmon producer, was instrumental in supporting the RSPCA's development of standards for salmon farming. Because of food scares, they recognised consumers needed reassurance about fish farming methods.

"In my job I constantly meet people who are concerned about how their food is produced. Labels such as Freedom Food's help us identify products from farms approved to higher welfare standards, providing all-important assurance about the origins of our food" – Nick Nairn

GET FREEDOM FOOD PRODUCTS DELIVERED FREE FROM www.farmgatedirect.com

Now you can get Freedom Food goodies delivered direct to your door, thanks to the new Farm Gate Direct website, which features a wide range of products such as Loch Duart salmon and Manydown beef and lamb.

All the merchants on Farm Gate Direct are Freedom Food approved.

SPECIAL OFFER OFM readers get free delivery on their first Farm Gate Direct order by entering OBSOO1 when ordering.

Certification Mark **www.farmgatedirect.com – Fresh from the farm to your front door.**

(Cited in The Observer Food Monthly, April 2004:36)

Working alongside these trends other 'dietary fads' encompass narratives of health which, on the one hand, link the consumption of animal products (fat) to high levels of cholesterol and incidences of cardiovascular disease; and on the other hand encourage the intake of protein as a way of losing weight, exemplified in the case of the Atkins diet. Food choices then are increasingly seen to reflect the lifestyle of individuals and thus raise ethical and political issues over how consumer freedom to choose can be reconciled with 'unseen others' in the food chain.

Indeed, Braun and Castree (1998:4) argue that "global nature is increasingly remade in the image of the commodity". Consequently, if a commodity is defined as 'something useful, self-evident, ubiquitous and everyday that can be turned into commercial advantage' (Watts 1999), 'an object produced for the purpose of being exchanged' (Jackson 2002), or 'a process through which things are culturally encoded and appropriated for trade' (Winter 2004); at what point do cattle become a commodity within these food scares and health narratives? What exactly does it mean to turn a living creature into milk or meat? When is an animal edible, inedible, consumable? In this section I want to address these questions of how cattle are commodified – that is, embodied with a particular set of uses and values and rendered for sale - by focusing on how food, particularly meat, is produced and consumed. In so doing I want to unravel underlying political and ethical issues – how are cattle (re)produced and who controls this process (after Whatmore and Boucher 1993:167)? – by introducing literatures that work through various approaches to studying food that range from Marxist and political economy to socio-constructionist and post-structuralist theorisations.

1.21 Making Nature

Karl Marx describes the commodity as the 'economic cell form' of capitalism. It is something which has both physical qualities through its uses, and social qualities through its exchange value. It is the combination of these two qualities that produce a commodity which is sold for money and thus generates a profit for the capitalist (Schmidt 1971). Marx focuses on labour processes as the site at which society systematically engages with and transforms the natural world, but he makes a crucial distinction in this dialectical relationship, arguing that humans produce their means of subsistence as a productive activity whereas animals do not (Fine 1998). While Marx focused on the bourgeois conceptions of nature he left other social relations with nature under-explored.

In light of these limitations a second strand of Marxist scholarship emerged. With contributions from geographers such as Neil Smith (1990) and Andrew Sayer (1979), there began a shift towards thinking of nature as produced. That is, under capitalism humans relate to nature in a specific way and in so doing actively appropriate, transform and possibly destroy it (Castree 1995). Consider for a moment the role of human inventiveness in breeding the most productive animals. Here, the

capitalist production regime stops at nothing for profitability in its transformation of cattle into marketable commodities. Although both of these strands offer an account of how nature is produced, according to Castree (1995) they lose sight of the materiality of nature – how social and natural phenomena are real and active. Thus, Castree (1995) argues that although these strands describe how capital is producing natural environments in its own image, this is done at the expense of the natural environments themselves. Addressing this rupture is seen as taking significant steps towards engaging in struggles between nature and humans.

Fitzsimmons' (1989b:1) concern that Marxist geography had forgotten the often dominating relationship between society and its material environment has seen the emergence of different strands of ecological Marxism that encompass nature as physical stocks and potential uses, and as biological life in process (see Fitzsimmons and Goodman 1998). Although it is important to recognize that not all Marxists theorize the commodification of nature in capitalist societies in the same way, attempts to reintegrate nature into critical geographical enquiries have resulted in an emphasis towards the realm of production (Buttel 1998). This means that these commodity narratives do not pursue the importance of consumers in any depth - what are we being sold and how are we consuming? One theoretical approach attempting to bridge this gap and 'bring nature back in' has been agro-food studies.

1.22 Agro-food Studies

The terrain in which academics operate in agro-food studies research is changing from its established territory of agriculture, the farm, and food as a raw commodity, to a broader desire to identify reciprocal relationships between consumers and the production process (Fitzsimmons and Goodman 1998). In this way, the intellectual project at work has focused on commodity chain analysis (Friedland 1985). Commodity chains, defined as a "network of labour and production processes whose end result is a finished commodity" (Hopkins and Wallerstein 1986:159), provide researchers with opportunities to rework a commodity's meaning along different sites in the chain: through production, distribution, retailing, design, advertising, marketing and consumption (Leslie and Reimer 1999). Robbins (1999), for example, in taking a 'horizontal approach', traces the final product (meat) backwards to the raw material inputs (livestock). In so doing, Robbins (1999) examines the visceral meanings that flesh can possess in embodying life force, class power and congealed death or elixir of health and thus how these opportunities to re-sign the taint of flesh - the meat as object - encompass new households, new markets, and new kitchens. Boyd and Watts (1997), on the other hand, take a 'vertical approach' to suggest that 'just-in-time' practices prevalent in the broiler industry in the United States derive from both the qualities of the product itself and its distinct historical and geographical embeddedness in Southern States. Pointing a way through these

lines of enquiry, Gouveia and Juska (2002) look at the commodity in different 'moments', examining how corporate responses and regulatory frameworks in the U.S beef industry are addressing issues of bacteriological meat contamination and an over reliance on Latino immigrant labour in ways that (re)define what constitutes safe meat, who is to blame for meat contamination and how meat safety should be assured. Taken as a collective, these strands of analysis illuminate a highly contested border between production and consumption. Indeed, the question emerging out of these examples is not 'what is a commodity?' but rather 'what characteristics do things (cattle) take on when they become commodities' (Castree 2003b:277)?

1.23 Sociology of Food and Eating

How have sociologists of food embraced this 'consumption turn'? Sociologists have paid increasing attention to the meanings, beliefs and social structures that have given shape to food practices in societies (Lupton 1996). There are four main tenets to this interest in food and eating. Firstly, sociologists have explored the relationship between eating and the consumer, addressing the symbolic value of food and meals to reveal the cultural rules underlying nutritional requirements (McIntosh 1996). For example, DuPuis (2002) traces how milk became a staple of the American diet, 'nature's perfect food', represented as a pure product providing nutritional sustenance amid an ideology of the healthy body. Secondly, sociologists have examined how food practices and habits serve to support a sense of community and identity (Levi-Strauss 1965). Lupton (1996) illustrates this through the purchase of a McDonalds Big Mac, arguing that membership of a cultural group is conveyed through the product's advertising and display, and from talking about, touching and tasting the burger. Thirdly, sociologists are concerned with social welfare and the unequal distribution of nutrition (Mennell et al, 1993). In this regard, Adams (1990) has sought to explicate the relationship between meat eating and male dominance in bringing together women's groups, animal rights activists and environmental organizations. Fourthly and finally, sociologists are also interested in how things that are purchased are used afterwards (Goodman and DuPuis 2002). In this way sociologists aim to follow the reproductive worlds in which things gain other meanings through everyday life, to interpret these transactions and how they enliven things (Appadurai 1986).

Together, this concern with eating practices is taking the spaces of shopping, cooking and eating more seriously, and thus calling into question the borders of the human body. The (human) body, therefore, is not viewed as a 'machine' that ends at the skin, but as an open and porous entity linked to others through its many surface secretions (Martin 1998). In the first instance food is configured as a pollutant, an invasive and intrusive substance and 'a threat from the outside' (Fischler 1988:279; Stassart and Whatmore 2003; Whatmore 2002). BSE, for example, calls into question human identity. Here the metabolic exchanges between cattle and humans can lead people to contract CJD

(the human form of the disease) - taking over the victims proteins bringing a loss of memory, dementia, and eventual death (Fitzsimmons and Goodman 1998). Following on, and in the second instance, this leads to an exploration of the actual moment of consumption: selection (the physical appearance, size and texture of meat on the supermarket shelf), preparation (flavouring, methods of cooking, smells, bloody juices and changes in colour and texture), to the act of placing the meat on the fork and into ones mouth (the chewing sounds as the foodstuff comes into contact with teeth and tongue, the taste as it combines with the saliva, how the sensory experience changes from mouthful to mouthful) (Lupton 1996). The question emerging here, then, is about whether humans are eating or being eaten (Probyn 2000).

There has been a persistent call for work that bridges the gap between food producers and food consumers (Freidlberg 2003; Winter 2003 2004). While cattle as commodities occupy the two conjoining spaces of the economy: production and the market (Goodman and DuPuis 2002), agro-food studies and food sociologists in responding to this call reiterate a compartmentalization of production and consumption (Fitzsimmons and Goodman 1998). In relation to food sociology, there remains a tendency to look at what, how and with whom people eat rather than tracing the steps to the animals in the field. Harvey (1990:422), for example, describes how one can consume a meal without any knowledge of the complex geography of production and the social relations that produce it. Following on, and regarding agro-food research on commodity chains, researchers appear reluctant to move away from analytical moments that privilege the 'production sphere'. That is, ideas surrounding consumption are then used to discuss production – the consumer remains nebulous and production and consumption highly asymmetric (Goodman and DuPuis 2002 see also Gouveia and Juska 2002). With these anxieties in mind, I want to argue that these literatures often fail to consider how the commodity shifts registers between animal and meat, matter and meaning. Cattle becoming commodities remains concealed rather than disclosed, humans are producing or consuming cattle rather than connecting to them.

1.24 Commodities with shadow geographies[6]

IBP markets every part of the cow but the moo
(Meat packing employee, cited in Stull and Broadway 2004:4).

Meat and milk, dothes and textiles, adhesives and paints, tiles and linoleum, floor wax and asphalt binders, brake fluid and photographic film
(adapted from Animal Agriculture Alliance 2003 and Cunningham 1995).

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6 The use of the term 'shadow geographies' derives from Thrift (2002:293).

Consider the list above for a moment. It is in inventory that both details the edible and hence more recognizable items that connect people to cattle, and also the less visible and well-known by-products. The point of slaughter then does not dismember the animal solely for the purposes of meat but configures it into a variety of other things. I want to argue that there are 'hidden' facets that link the live animal (resource) to the dead body (corpse) that it will become (after Adams 1990), a shadowy in-between of fleshy connections that are not articulated in the literatures discussed so far. I want to indicate four strands.

Firstly, animals themselves have a shadow geography. As commodities it could be argued that every aspect of their lives are determined and monitored: from their nutrient intake to their genetic inheritance, and from any surgical procedures that they may undergo to their timely death at the slaughterhouse. On the other hand, it is perhaps important to consider how cattle shape and resist such practices: through their bodies (not responding to drugs and procedures), their habits (acts of eating) and interactions with the herd and humans (expressions of distress and being in pain, their abilities to render products 'unsafe'). How can animating the life experiences of cattle in these ways configure alternative human-animal relations within commodity frameworks?

Secondly, the previous literatures do not discuss the hidden points of contact that humans have to both living animals (tracing the origins and use of growth hormones and antibiotics) and the processes that take place in preparation for dead animals (the cellophane packaging, bottle, carton, and tin). Moreover, in a recent paper on the sociology of consumption, Hetherington (2004) addresses directly the important issue of disposal. Disposal, he argues, is never as final as is implied by the notion of rubbish but emerges from managing social relations. Citing the smell of fish in the fridge and crumbs on the floor, Hetherington (2004) understands disposal as managing an ever present potential absence, an (animal) absence that does not appear as a visible agent. In other words:

> We put things in a supposedly stable state context – dispose of them – so that we do not have to deal with their implications in a direct way... we also dispose of them by keeping certain things outside (Hetherington 2004:163).

I would argue, therefore, that embodied memories linger long after one has physically moved on (sweeping up crumbs, placing packaging in the bin), thus traces of what is eaten somehow remain with us.

Thirdly, issues regarding space and place. Do cattle remain in the spaces allotted to them - the parlour, yard, shed, slaughterhouse conveyer belt and so on? How do they inhabit and change these places? Even in death there is a spatial geography to the aisles in which we find their products. For

on supermarket shelves we don't see the corpse, instead we see packaged goods. Think for a moment why it is that milk, cheese and yoghurts are located in one section and meat products in another, both need to be refrigerated so why aren't they kept together? Or, why is it that when you walk past a butchers shop with cuts of meat hanging down in front of the window it is more likely to be pigs rather than cattle on display? Why do supermarkets rarely display carcasses? In these instances cattle have already been disassembled into round steak, tenderloin and rib eye. From the farmer looking at the cuts that they foresee, to the roles of the knocker, sticker, shackler, rumper, first legger, knuckle dropper, navel boner and splitter (Schlosser 2001:172) and the tools that they use to dissect animal flesh along the conveyer belt, there is a whole geography surrounding the bloody nature of these acts and the arrival of products onto shop floors and into the home (kitchen, dining room, bathroom).

Finally, the ethical and political issues that materialize. From property rights over genetic technologies and trademarks, to the setting of production standards and product specifications (Weiss 1999); and from different farming practices that change the ways in which animals are kept and treated (figure 1.4) and the envoys of taste, texture, colour and smell that accompany the animal as a body-product (after Fiddes 1991), to the role of legislative structures. This work is concerned with exploring how humans 'act on their stomachs' (Probyn 2000) thus re-thinking 'farming as a commodity' (Macnaghten 2003) and questioning the status of humans as being above edibility (Plumwood 2000). And yet within these emerging literatures many of the living and non-living spaces of cattle are somehow lost. I am thinking here of the tangible links between the importation of cattle feed, the milking parlour and refrigerated lorry; or the use of drugs, the injection site on the animal's skin, incorporation and seepage from its body. How might tracing cattle in some of these ways disrupt the horizontal and vertical approaches to production and consumption that I have discussed?

In the next section of the chapter I want to continue to develop this theme of how cattle are disclosed in some ways and concealed in others. I want to apprehend other metaphorical and material connections that humans have to cattle by looking at the ways in which they are depicted in material culture. To what extent do these images call into question the certainties and rationality of science and linear approaches to studying cattle as commodities?

1.3 Cultural Representation

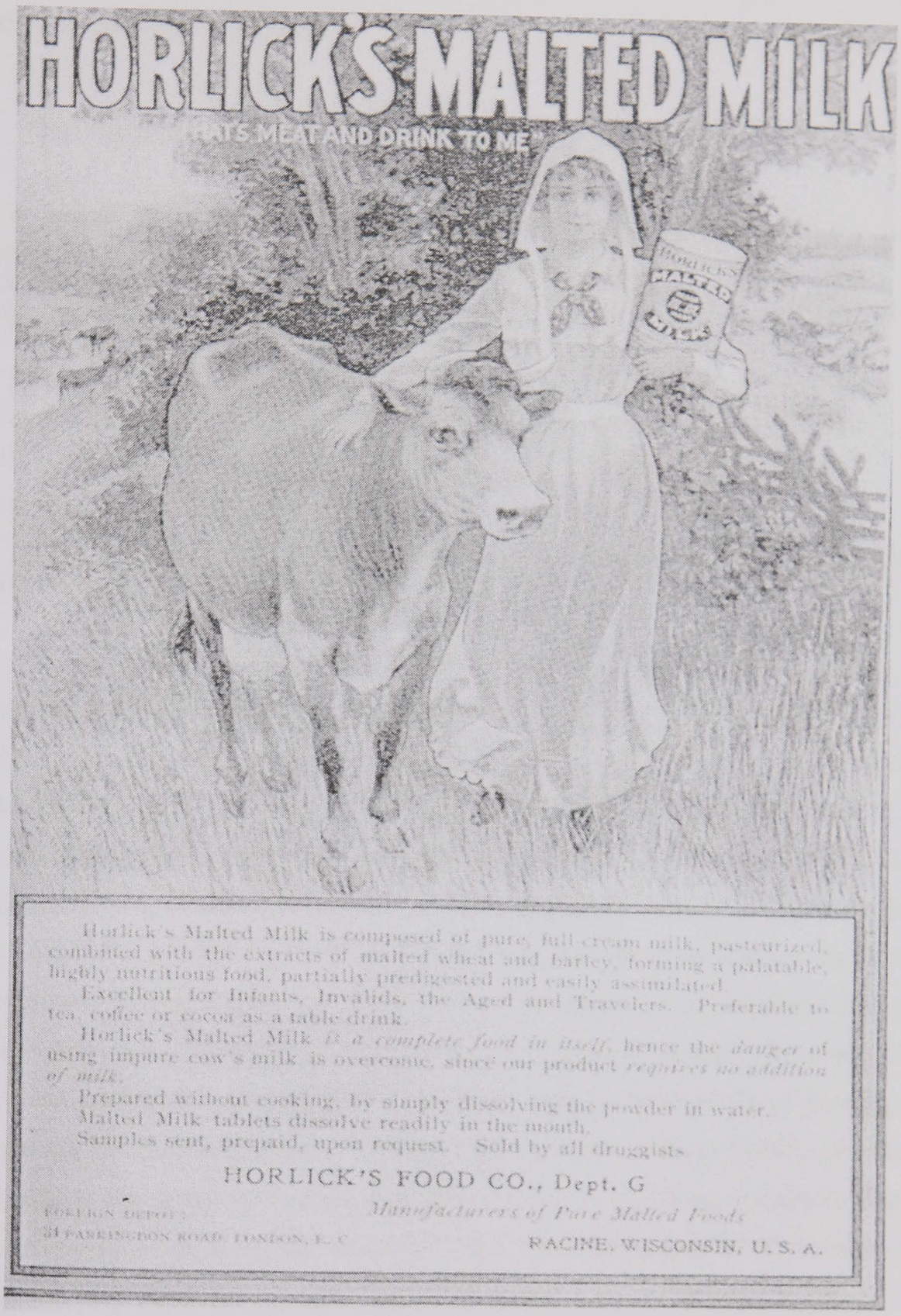
> Any understanding of the animal, of what the animal means to us, will be informed by and inseparable from our knowledge of its cultural representation (Baker 1993:4).

Human acts of representation, whether through images or image-making like painting and film, or through spoken or written language, are taken to be unavoidably central to the meaning of animals and their relations to humans. Thus animals rarely present themselves in any 'natural' way to humans, they are given cultural meaning. In this section of the chapter I want to reflect on some of the ways in which cattle are assembled and ordered in ways that make them meaningful to humans. I begin by attending to how cattle are represented in popular culture, from their use and the subsequent amusement that some people derive from their portrayal in the media to the 'pictorial violence' (Baker 1993) of bullfighting. I then move on to discuss the spaces that cattle occupy through such representations: what do these images suggest to be the 'proper' place of cattle in human lives? Finally, I examine the tensions between these semi-playful ways of thinking about cattle and the alternative presentations and perspectives of animals that artists such as Sue Coe, Francis Bacon and Damien Hirst seek to evoke. In particular, how do these works allow alternative conceptions of cattle to be imagined?

1.31 Popular Culture

Since the emergence of advertising as an industry towards the end of the last century, animals have been used to promote consumer goods. Advertising has become a powerful reflector and manipulator of values, relying heavily on accessing deeply held ideals and images and then moulding these into new and simpler traditions (Bunce 1994). Animals thus offer a perfect set of images for the promotion of certain products as their manipulation and application often remains unchallenged by the animals themselves. In what ways are cattle used in advertising?

Figure 1.6: The marketing of pastoral purity, Horlick's advertisement (1901)



(Bunce 1994:73)

DuPuis' (2002) analysis of milk advertisements in the United States illustrates how the imagery of a milkmaid and cow were preferred themes in advertising until the early twentieth century. For example, a 1901 advertisement for Horlick's milk (figure 1.6) pictures a virginal milkmaid with her hand protectively round a contented cow's neck holding a jar of malted milk. The words underneath

the picture - "Malted milk is composed of pure, full cream milk", "a highly nutritious food" and "excellent for infants" - are all used to project the purity of the product. Bunce (1994:74) describes how these connections between food and wholesomeness remain popular among food companies today:

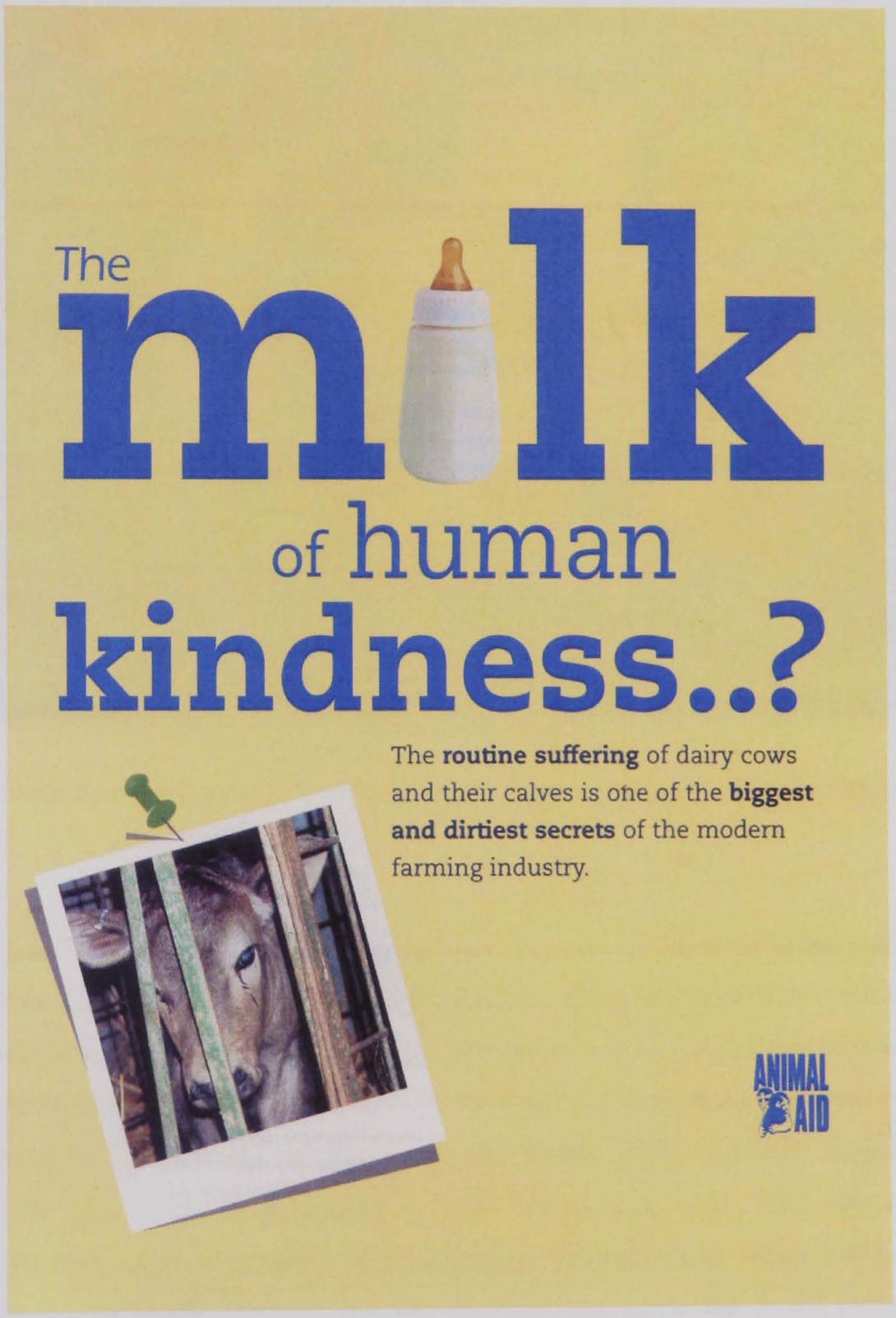
> *'We are lucky cows, we chew the cud and browse, cos we're eating up our greens, it makes our butter taste supreme'*
> (Anchor Butter television commercial: cartoon cows depicted in a field singing the jingle above. Cited in Baker 1993:3).
>
> *'Cravendale... the cows want it back'*
> (Cravendale milk advertisement: a man goes to a shop and purchases a carton of milk and a group of cows follow him home, the commercial ends with the slogan above).
>
> *'The white stuff – are you made of it?'*
> (A television, online and school based advertising campaign endorsed by celebrities which aims to encourage people to drink more milk).

Taken collectively, the cattle portrayed in these advertisements are seen to be somewhat funny or at least likely to be funny. They range from the amusing – singing cows in fancy dress (Anchor commercial) through to the bizarre - cows turning up at a high rise apartment block to retrieve a carton of milk (Cravendale advert). In the first two examples people are depriving cows of goodness, their product is healthy and they roam free. The last example (the 'white stuff') aims to break away from these traditional themes with their emphasis on the presence of cows, to focus instead on sending key health messages to parents. Furthermore, this campaign also highlights the presence of a production-consumption divide that DuPuis (2002) has identified in food advertising. That is, the producers of the milk (cattle), and the ways in which the milk has been produced (farming practices), have disappeared. In this way advertisers establish a gap between 'what we know' and 'what we wish to believe', where one is not concerned with the accuracy of the living conditions depicted, but rather the nutritional properties of the product (Baker 2001). Baker (1993:174) describes how such commercials do not allow us to make sense of animals, rather through a process he terms 'disnification', they make 'nonsense of the animal' as human understandings of cattle become shaped by representation rather than direct experience. In these advertisements, then, consumers are not invited to problematize the vacuous meanings of cattle as they circulate in the space of representation (Baker 2001); rather an emphasis is placed upon the image of the foodstuff. What all of these image-making portrayals have in common are the ways in which they mask the production system.

Amid growing public anxiety over the safety and quality of foodstuffs (see part 1.2), food companies and farming organizations have mobilized imagery of cattle in ways that suggest they are 'unmasking' the way that food is produced and thus reassuring consumers of the naturalness and healthy nature of their products. Woods (1998) describes how the erosion of beef sales in light of the BSE/vCJD crisis led the National Farmers Union (NFU) to produce posters depicting healthy looking bulls in lush green settings. As the U.K government became embroiled in debates at a European level animals were further incorporated into political debates through a patriotic rhetoric that saw the placing of union jack flags across cattle bodies on posters.

Both the distancing effect of advertisements that seek to remove cattle on the one hand, and their re-insertion in times of crisis on the other, have been challenged by animal rights groups and animal welfare organizations who aim to re-connect people to the ways in which cattle live out their lives. People for the Ethical Treatment of Animals (PETA), for example, is one of a number of groups challenging the healthiness of milk and calling for access to dairy products to be restricted among schoolchildren. PETA describe how "at a time when they [school children] should be learning about nutrition and good character... they are being served unhealthy products and shown an indifference to animal suffering" (PETA 2003). This theme of 'farm animal suffering' is drawn on by other organizations:

Figure 1.7: 'The reality of the dairy industry'



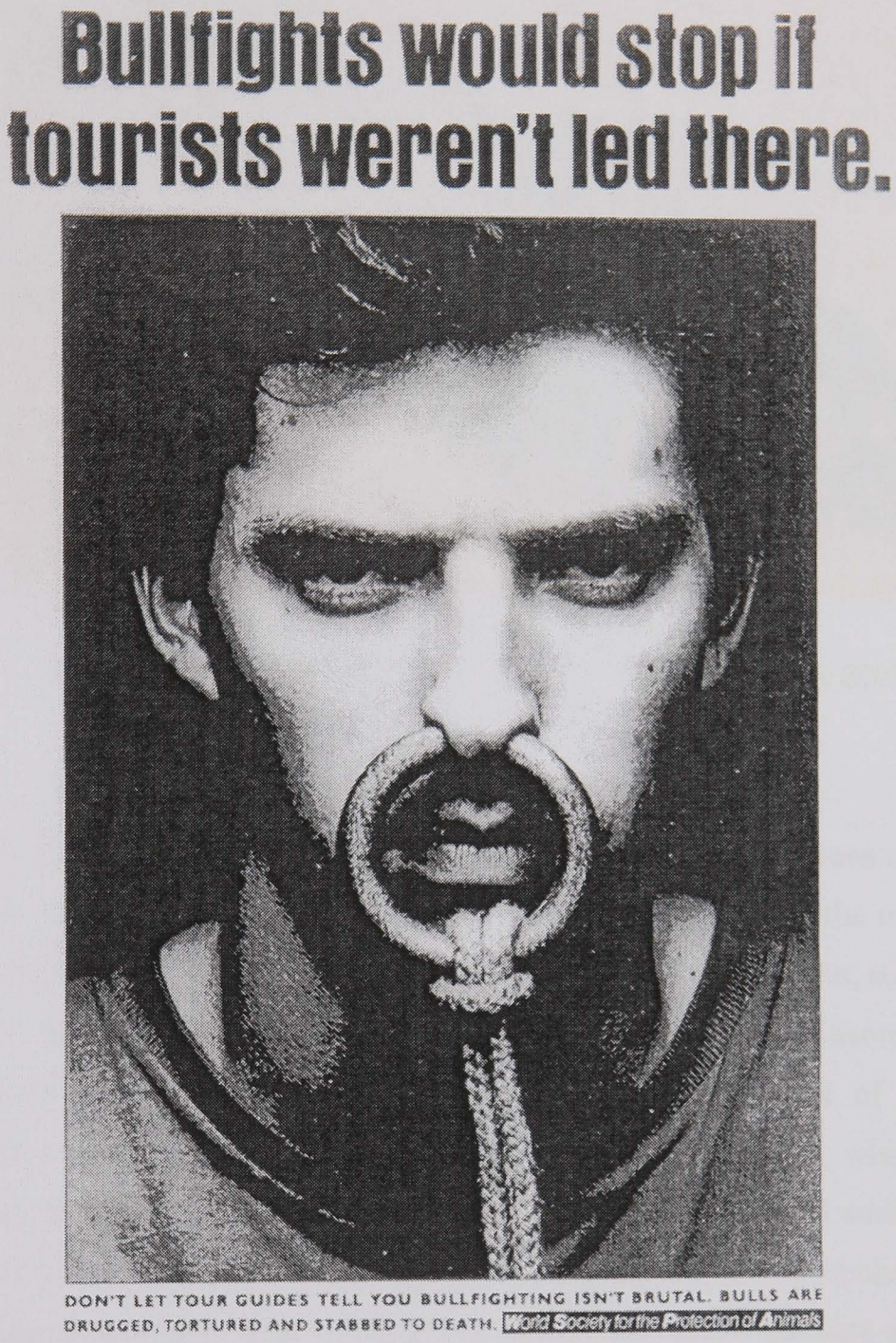
(Animal Aid, undated)

Figure 1.8: 'The dairy cow's work is never done'

(Farm Animal Welfare Network and National Society Against Factory Farming, undated)

Both of these leaflets are trying to conjoin people with the animal. The distressing pictures used, of cows and calves abused at the hands of the dairy industry are presented with the aim of promoting changes in methods of farming. Figure 1.7, the picture of a lone calf behind bars and the word "kindness", can lead to comparisons between the maternal bonding between mother and child that is absent between cow and calf. In figure 1.8, the words "milk machine" suggest that cows experience cycle after cycle of pregnancy in order to produce milk. The way in which the photograph has been taken, at an angle that emphasizes the cow's large udder, indicates the strain on this animal and the health consequences that result through leg problems and protruding bones. I think that there is an emotional pull here as these organizations attempt to convey the animal's plight. For they seek to breach the borders between ones own body and that of the animal (Baker 1993) and, as Martin (1992) describes, the cow presented as food matter becomes problematic as milk is the only food produced in both cow and human female bodies. This blurring of bodies - what does it feel like to be a dairy cow?- has also been actuated by the World Society for the Protection of Animals (WSPA) as part of its 'culture without cruelty' campaign that calls for a ban on bullfighting.

Figure 1.9: Anti-bullfighting poster



(Baker 1993:225)

The poster above (figure 1.9) was displayed in U.K airports with charter flights to Spain. It was subsequently removed from some airports because managers did not want to offend customers and tour operators. In this image the public are not shown an animal suffering, rather a human treated like an animal. Its power to disturb then comes from the way in which it leads us to consider that which is unpictured – the animal in pain (after Baker 1993). More recent images have sought to emphasize the situation and distress of animals during bullfighting events:

Figure 1.10: Bullfight – no contest

(WSPA 2003b)

This image (figure 1.10) suggests that bullfighting is never a fair contest between one man and a bull, but a staged event so that the bull never wins. For the photograph shows the matador's assistants confusing and tiring the bull, depicted through its tongue which is hanging out, so that when it faces the matador it is already exhausted. Moreover, the bloody and painful nature of the sport is represented through the spears, puncturing the bull, blood flowing out of its wounds. Pink (1998:126), however, describes bullfighting as a "commercial enterprise, which must be both contemporary and traditional in order to satisfy its broad range of potential audience; it must be a marketable tradition". The depiction of bullfighting in Spanish culture is symbolized by a fierce and strong bull entering into combat with a young, courageous and brave matador who can become a heroic figure if he is awarded sufficient tails and ears in contests (Porath 1998).

Bullfighting exemplifies the often disparate imagery surrounding animals. Cows, for example, are portrayed as maternal, producing pure, wholesome and healthy milk. Bulls, however, are aligned to more masculine and patriotic imagery, the beast or brute associated with bravery and fertility. Additionally these representations erect a clear division between humans and animals, hinting at the ethical and political tensions that underlie the ways in which people associate cattle with food and sporting events. On the one hand, 'we' distance ourselves from 'them' in ways that see their removal from our narratives – where does milk come from? On the other hand, such distinctions become increasingly addled as the public are asked to identify with the life of an animal – the dairy cow pushed to its physical and emotional limits and the bull that suffers in the arena. All the images used in this section advert not solely to the animal, but also to a juxtaposition of productive spaces – the

farmyard, field and marketplace; and consumptive spaces – kitchen, school playground and bullring. I now want to move on and explore some of the spaces and places represented in these images.

1.32 Cattlescapes[7]

In this part of the chapter I want to discuss some of the ways in which cattle have figured into different constructions of the pastoral landscape (Yarwood and Evans 1998). How are cattle positioned in material and imaginary spaces, from the nostalgic and sentimental to the diseased and endangered? How are these placements open to contestation?

If one returns to figure 1.6, the purity of Horlick's milk is projected through the inclusion of a peaceful and tranquil pastoral setting. Bunce (1994:29) explains how the absorption of nature into a more general sentiment for rural scenery can be attributed to the general belief that rural life is more natural than urban. Following on, responses to a survey on 'defining rurality' conducted by the Countryside Alliance (2002) included:

> animal related pursuits; farmed animals and mass produced cropping; area with significant stock rearing; few large townships and no conurbations, but lots of farms, whether dairy or arable; outside of urban and suburban areas; all agricultural areas.

In these answers a division is set up between town and country. Crucially, animals are seen to comprise the pastoral environment, helping to define farming as a way of life and thereby delineating rural areas. Thus cattle are part of a local production system and an integral element of the landscape. This ideology of peace and tranquillity, a green and pleasant land under cultivation, still persists today (Halfacree 1996). In advertising, for example, animals act as props for an imagined 'rural idyll' (Woods 1998). I am thinking here of how a Sainsbury's carton of milk depicts a Friesian cow in lush green pasture with clear blue sky. In this way, the material conditions in which cows are living out their lives often bear little relation to those depicted on the products packaging. I want to provide two examples that illustrate this fracture between the idyllic rural settings used to confirm the naturalness of the product and the material conditions in which cattle reside.

Firstly, this paradox can be illustrated by an ongoing legal dispute between the California Milk Advisory Board (CMAB) and PETA. The CMAB have screened a series of advertisements in the United States carrying the slogan "happy cows come from California". These advertisements portray cows living in spacious grassy pastures. However, PETA argue that the advertisements are unlawfully deceptive as the conditions in which the cows are living are very different from those portrayed (figure 1.11).

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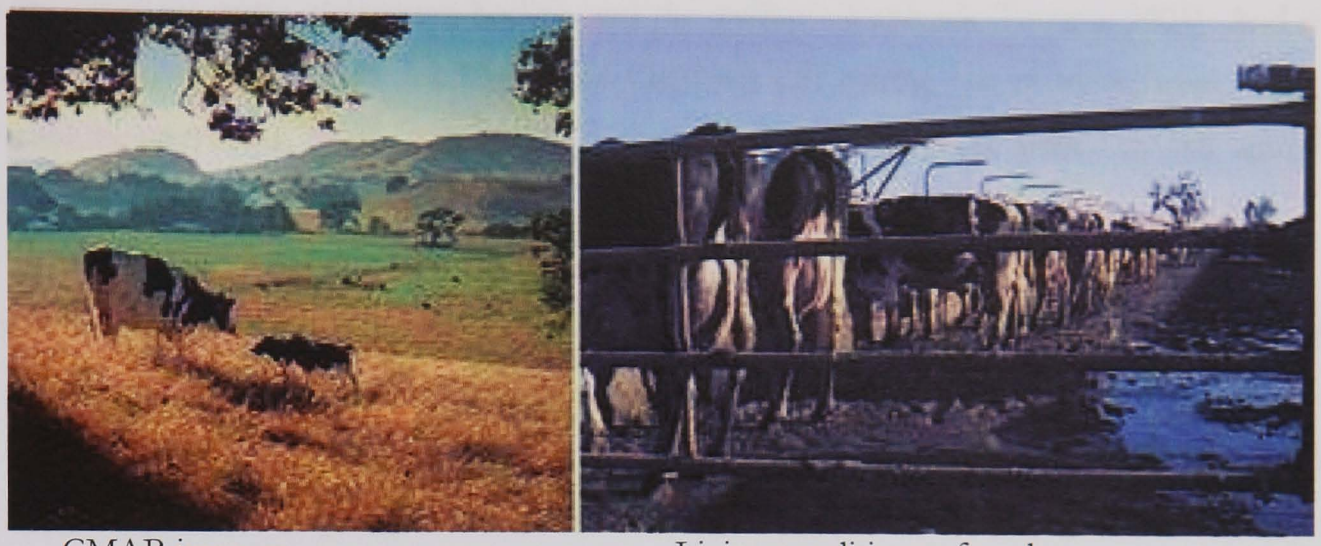
[7] My use of the term 'cattlescapes' derives from Evans and Yarwood (1995:144).

Figure 1.11: 'Happy cows come from California



CMAB imagery Living conditions of cattle

(PETA 2002)

Secondly, this imagery of pastoral idyll and 'happy cows chewing the cud' was also shattered in 2001 with the outbreak of Foot and Mouth Disease (FMD). Restrictions and exclusion zones prevented the movement of animals on and off farms and the skyline became hazed by the blackened smoke from burning heaps. In recent times, then, the enrolment of animals in pastoral idyll has been questioned once more as the countryside became seen as a diseased and out of bounds space.

Figure 1.12: Phoenix

(http://www.bbc.co.uk/news/1/hi/uk/1298373.stm, last accessed 26 April 2002)

This picture, figure 1.12, is of a calf called Phoenix. Found amongst a pile of dead corpses, she became a symbol of hope during FMD as newspapers and television stations began a national

campaign to save her from being culled. Phoenix was used to tell particular stories about those caught up in the epidemic, including the plight of farmers losing their stock, the air quality issues from the resultant pyres of burning bodies, and the welfare of animals (Browne 2001). And it was her appearance - a photogenic 'cuddly' white Charloais calf staring out of newspapers - that was influential in provoking public protests and controversy regarding the policy to cull animals in infected areas.

An ongoing example regarding the spatial manipulation of animal lives can be found around the rural heritage industry (Yarwood and Evans 1998). Here cattle are inscribed into consumption rather than production narratives, with animals of a more unusual appearance displayed in rare breed centres (Yarwood and Evans 2000:105). Moreover, this affection for certain breeds is drawn upon in the promotion of places (Yarwood and Evans 1998). For example, Welsh Black cattle are linked with North Wales, Highland cattle to the Scottish highlands (Evans and Yarwood 1995:141) and Gloucester cattle associated with Minchininhampton Common, Gloucestershire (Evans and Yarwood 2000:242).

These examples hint at the importance of cultural rather than physical factors in determining the place of cattle in the world (Evans and Yarwood 1995). Divisions are not only set up between rural and urban areas and entangled with ideas regarding health and disease, but also between different breeds of cattle (the productive and the rare) and their insertion into production and consumption narratives.

It is important to stress that in other cultures cattle cannot easily be positioned into production/consumption and urban/rural narratives. In India, for example, the majority of the population are Hindu for whom the killing of cattle and eating of beef is unthinkable. Shiva (2000:73) describes how "sacred cows are the symbols and constructions of a culture that sees the entire cosmos in a cow, and hence protects the cow". India has the largest concentration of cattle in the world dwelling on just 3% of the planets land area (Fox 2003:238). This 'sacredness', therefore, faces challenges from a number of directions. Firstly, cattle disrupt the everyday lives of urban inhabitants, eating rubbish and causing traffic jams. This has led local authorities to round up stray animals (figure 1.13) and take them to special compounds on the edge of cities (Mynott 2003).

Figure 1.13 Rounding up cattle from India's streets

(Hall 2004:41)

Secondly, the Indian government's traditional anti-meat rhetoric has been questioned not only through the publication of a book by Indian historian Jha (2002) who has examined archaeological records to suggest that Indians have a rich history of slaughtering cattle for food and elaborate sacrificial rituals, but also through trade liberalization strategies and the global market economy being pushed by the World Trade Organization (WTO) (Robbins 1999). How can the removal of cattle from the streets be reconciled with their role in attracting tourists to urban cities such as Delhi? What are the implications (for humans and animals) if India converts from being a culture of sacred cows to an exporter of cattle meat?

Discussions in the previous two parts have highlighted the suspension between production and consumption, urban and rural; and how eliminating some breeds of cattle for more productive ones, or seeking to remove cattle altogether, can alter the appearance of the landscape. I now want to move on and think through the role of art in overcoming such dichotomies, to contemplate how artistic works alter the 'real' and 'imaginary' spatial registers explored in this section, and to

investigate the ways in which art may operate as a fissure to the constructions and meanings explored in the chapter so far.

1.33 Art exhibitions and displays

An animal reduced to meat is no longer an animal.

Art is less concerned with knowledge, of how this matter came to be, and more interested in experience and indeed pushing forward the boundaries of what can be experienced. Artists, then, offer the raw materials from which viewers can spin out meanings. What becomes important here is what a particular art object can do. What alternatives do artists offer to depictions of cattle becoming meat?

The work of artists such as Sue Coe, Damien Hirst, and Francis Bacon aim to recognize the form of the animal, addressing its variable and vivid ways in order to take the human (consumer) and animal (as meat) out of meaning. One is not concerned here with "what the work means, nor about how it measures up to some Platonic ideal, but rather what it does: the embodied reaction that it summons up for both artist and audience" (Boyne 2001:284). Baker (2000) argues that no matter how botched the animal bodies may look, in terms of their incompleteness or being out of focus, they only need to be read as body to resist the reduction of an animal to undifferentiated meat.

Damien Hirst and Francis Bacon have both used images of animal carcasses to bring the animal form and meat into tension:

Figure 1.14: 'Triptych' – Francis Bacon, August 1972

(Cited in Conrad 2005:17)

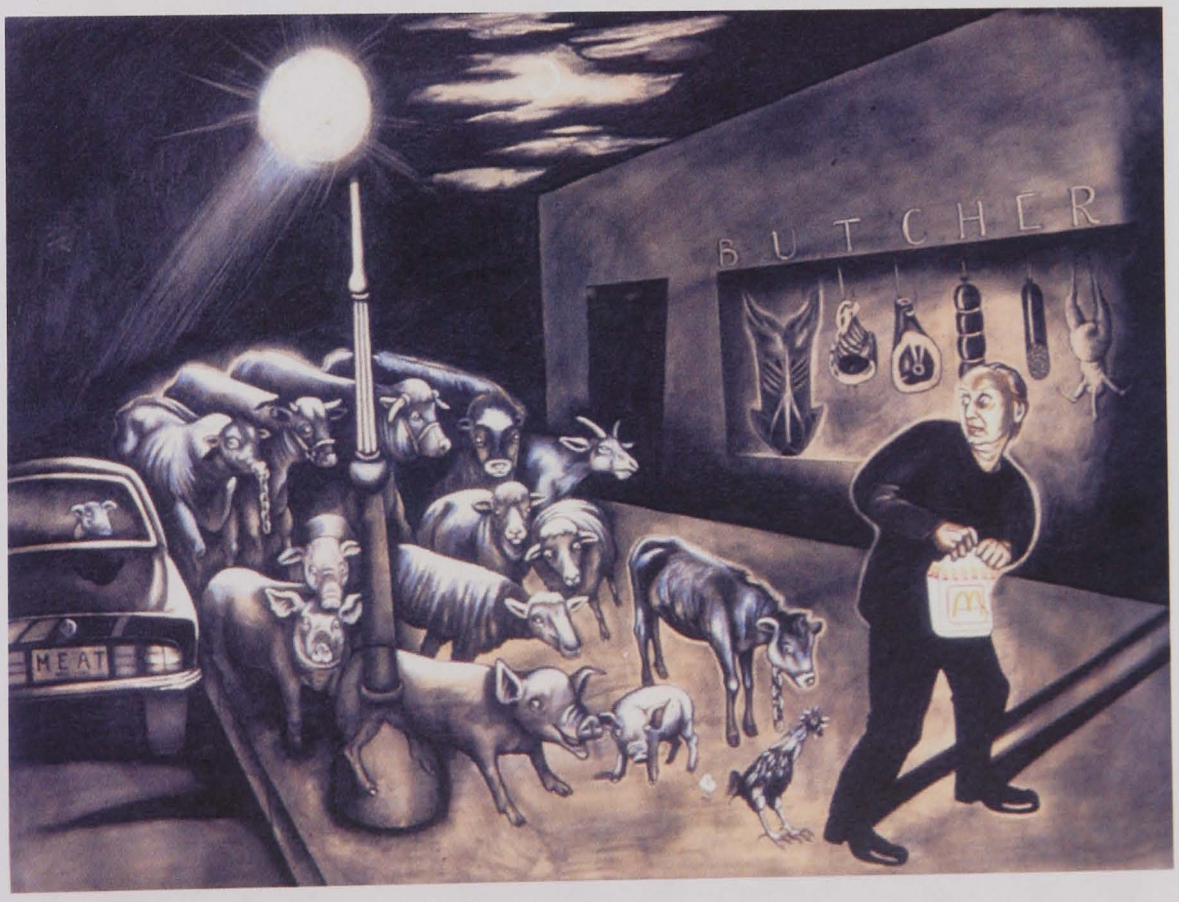
Figure 1.15: 'Malformed Calf' – Damian Hirst, 2004

(Cited in Cumming 2004:11)

Francis Bacon paints in an area of indeterminacy between life and death, flesh and meat, human and cattle. In figure 1.14 one is led to focus on suffering as the human and animal come together as meat and bone. The physical response that Bacon edges us towards is further strengthened by his determination to avoid narrating this work. He wants to communicate the feeling of what it is like to be meat by positioning humans and animals as being edible, cut down to size, put into cellophane packaging with preparation and cooking instructions. In Damien Hirst's work, on the other hand, the science and art world collide as the 'abnormal' body on display troubles boundaries within species (conventional/manipulated). What is important in both of these examples are the ways in which they aim to give the audience a multi-sensory experience of what the work can do in making us feel forms, colours, sensations - to imagine ourselves becoming 'animals-as-meat'.

Sue Coe also puts herself in particular proximity to the animal in conveying how creatures become meat:

Figure 1.16: 'modern man followed by the ghosts of his meat' – Sue Coe, 1995



(Cited in Baker 2000:110)

Coe (1995) spent six years visiting slaughterhouses in the United States, recording the killing and processing of animals in pictures and words. In the image above (figure 1.16) human and animal

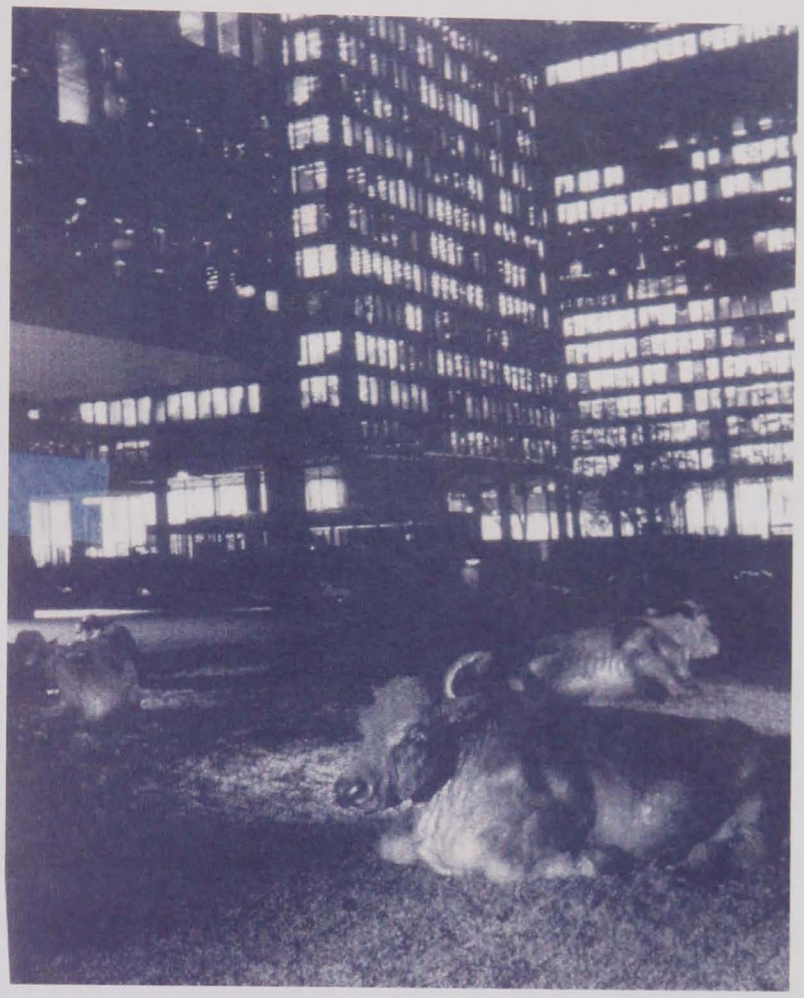
bodies become conjoined as she uses a combination of satire, sarcasm and humour to inform the audience how animals arrive at the slaughterhouse alive and leave dismembered in chunks. The man carrying the McDonalds bag is being followed by the spirits of his food, spirits that he has long since forgotten and digested. As he clutches the bag the animal phantoms behind him are sneering and laughing. In this work the animal ghosts and cuts of meat hanging in the butchers shop window collide, and through the McDonalds bag Coe hints at the victimization of animals that are part of an industrial, factory mass produced production system. Where does meat come from and how is it incorporated into human bodies? Even now one is left questioning 'who are the real victims here, the animals or the human consumers?'

This concern with making cattle visible has seen art work taken beyond the exhibitive space of the art gallery:

Figure 1.17: CowParade Manchester: cow trail map

(CowParade 2004)

Figure 1.18: 'The Pasture' – Joe Farfard, 1985



(Cited in Sabloff 2001:2)

Images 1.17 and 1.18 are taken from public art events in the United Kingdom and Canada that saw cattle displayed in urban environments. On the one hand, Cowparade saw hundreds of life size fibreglass cows colourfully painted and decorated by artists, celebrities and members of the public displayed at sites across Manchester. Farfard's 'Pasture', on the other hand, consists of a series of bronze cattle occupying a green space in Toronto's financial district.

What can be learned from these takes on cattle form? In the case of Cowparade and Pasture, although not created with 'animals-as-meat' in mind, they do seek to retrieve reminiscences of cattle from the ether of urban culture memory. For as these sculptures become part of the hustle and bustle of city life they set conditions and obstacles for humans, determining where they can and cannot walk. In contrast to living cattle that wander India's streets, art in these instances is supposed to be fun - seeing cows in unexpected places, and a way of raising money for charity.

While these sculptures and figures can be seen as sources of amusement and entertainment, they also raise questions about the extent to which art is part of a genuinely open minded and novel process of thinking animals anew or if it reinforces human identity (after Baker 2000:18). 'Pasture'

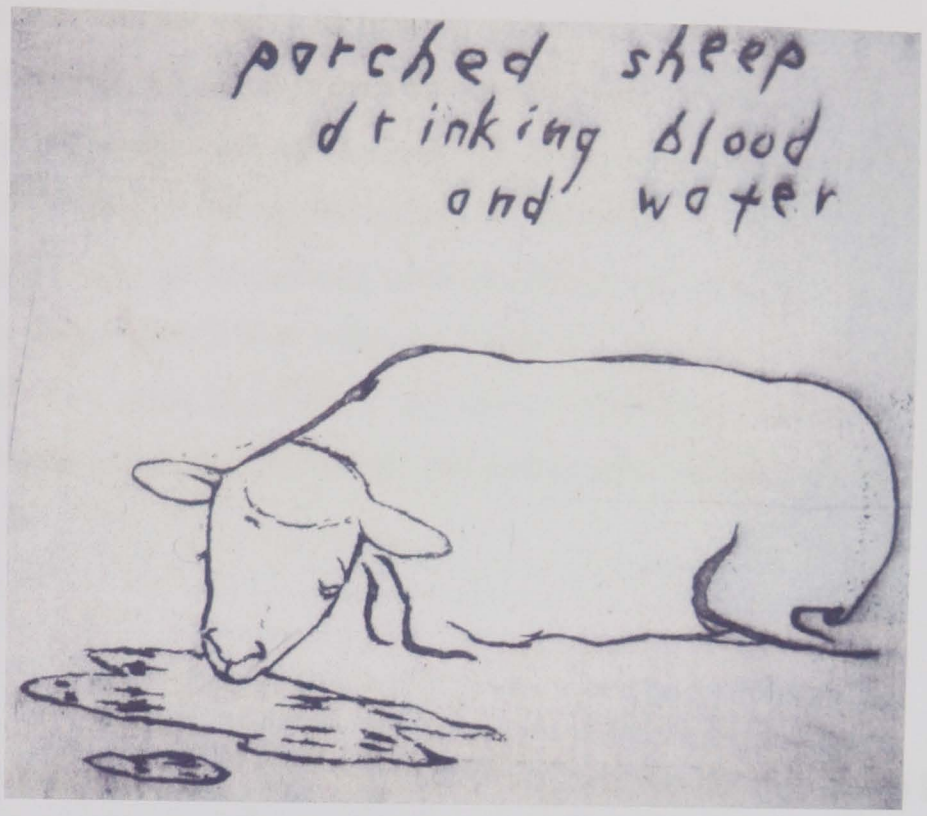
(figure 1.18), for example, sees bronze cattle models collide with the interests of the financial corporations commissioning and buying the piece and the local council responsible for approving its display. The cows decorated as part of the parade in Manchester (figure 1.17) are designed in ways that reinforce ideas about the host city. For example, 'cow-munity' brings together residents and professional artists to create cows that reflect the urban regeneration and renaissance that the city is experiencing; and both of these events were held to attract visitors and tourists. Pascal Knapp, the artist who created the original cowparade sculptures, when asked why he had chosen cows replied:

> because no other animal can be transformed into something yet retain its identity. To surface area and bone structures, height and length are all just right... We all love them. They're nurturing, whimsical, quirky...Cows provide the milk that fosters our development and are the basis of beloved childhood treats like ice cream. In short, everyone loves cows (CowParade 2002).

To what extent do these displays reinforce the maternal representations of cows found in previous advertisements (figures 1.5, 1.6 and 1.12)?

How are cattle to be approached through artistic works in ways that render them more serious and worthy of attention? Sue Coe, Damien Hirst and Francis Bacon all seek to resist setting up meanings, references and interpretations in their work and thus allow human and animal bodies to blend. But to what extent do humans and animals remain firmly in their place? Or, is one moving beyond such categories to a more ephemeral and immanent space in opening up to other animals? O'Sullivan (2001:129) describes how art occupies a borderline between the actual and virtual thus giving it "an ethical imperative because it involves moving beyond the already familiar (the human), a kind of self-overcoming". But in trying to take humans and animals 'out of meaning', the challenge for artists is how to be ethically responsible without appearing aesthetically sentimental. Sue Coe uses her work to express her moral and political outrage at the oppression of both animals and workers in packing plants, the following illustration (figure 1.19) hinting at the difficulties of trying to reconcile sentimentality with moral beliefs:

Figure 1.19: 'parched sheep' – Sue Coe, 1995



(Cited in Baker 2000:179)

But not all of the examples provided suggest a degree of sympathy for the animal. Damien Hirst's work has faced criticisms from animal welfare organizations and animal rights groups who describe him as a "demented child" and take a dim view of his sharp collision of life and death in butchering animals for the sake of art (Gibbons 2003). How, therefore, are artists and audiences to engage with the animal? Does the work of Hirst, Bacon, Coe, Cowparade and Pasture enable one to communicate with cattle in different ways, to make their lives and experiences visible to us? And as part of this dialogue with animals, to what extent do sentimentality and anthropomorphobia absolve an outcry against some of the ways in which animals are treated?

All of the examples discussed in this section of the chapter raise questions about the role of anthropomorphism: in what ways do Anchor butter commercials and Cowparade provide light-hearted ways of thinking about animals and in what ways do such representations become more serious, problematic and ethically charged through the work of animal charities, Sue Coe and Francis Bacon? I would argue that what all the examples discussed have in common is the way in which an asymmetrical relationship remains between humans and animals (Wilbert 2000). From the imagery of a milkmaid tending a cow (figure 1.6), to the traces and drawings made in 'dead meat' (figures 1.16 and 1.19) and the figures sculpted in 'pasture' (figure 1.18), all are in some sense imbued with political and moral discourses. On the one hand, such discourses ensure that cattle remain 'other' to humans and are used to justify their application for food, sport and entertainment.

On the other hand, even when these uses are questioned and animal and human forms brought together, the participation of the animals themselves is always mediated by humans. The cattle pictured in figures 1.7, 1.8, 1.9 and 1.10 have become infused with feelings – of suffering, pain, distress – so that the public can identify with the animals plight and support charity campaigns. But who, or what, can or cannot act purposively to bring about change (Wilbert 2000:238)? In emphasizing this conjoining of human and animal bodies there is an uncertainty and frailty to what is actually taking place: are we humanizing cattle or dehumanizing ourselves? What categories do and do not fit? The danger here is that collapsing 'other' for 'the same' leads to a flattened topology (Badmington 2003). Can other possibilities and ways of (un)doing human and animal bodies be explored, or will human and animal boundaries and dichotomies remain?

1.4 Conclusion

In this chapter I have traced some of the ways in which cattle are understood and known. Cattle are constructed by vets, economists, nutritionists, advertising executives, policy-makers, with the images and representations that are produced entering into circulation through professional training, books, television commercials, legislation and so on, in ways that have material and ethical consequences for the animals themselves (Braun and Castree 1998). All of this leads us to separate our (human) lives from cattle, to see them in some ways and not others. As the many examples in this chapter illustrate, the presence of cattle in human lives registers both through their appropriation as a 'resource' that can be experimented on for the purposes of developing human medicines (part 1.1); and as a 'corpse', cattle that need to be grown to be eaten and made into other (inedible) consumables like adhesives and paints (part 1.2). The result is that a series of dichotomies are established: human-animal, subject-object, urban-rural and production-consumption. Perhaps the time has now come to open up these dichotomies to critical scrutiny, to see if alternative narrations of cattle can be (re)discovered?

There are two areas of thought that make thinking about cattle beyond these binaries problematic. The first can be seen as an over-emphasis on building remnants of a pristine past. In scientific narratives the behaviour of domestic animals is compared to that of their 'wild' relatives, rare breeds find themselves placed in landscape conservation schemes and preservation narratives, and advertisements draw on notions of pastoral idyll to confirm the naturalness of the product and hint at an animal's way of life. But as boundaries of knowledge become expanded and contested; for example: cloning, genetically altering food and movements against intensive methods of farming; humans are connecting to the internal and external physiology of cattle in ever more intimate and unforeseen ways that make such remnants unendurable. The second area of thought concerns the

role of anthropomorphism. While singing cows and decorated bulls can be represented unproblematically on television screens, in scientific discourses where importance is placed on rationality and objectivity, and in artistic work with its imperturbable and exacting approach, anthropomorphism becomes seen as emotive and sentimental 'baggage' and its potential role as a tool in formulating questions about animal experience (see de Waal 2001) remains under-explored[8]. The consequences of trying to negotiate these pristine past and anthropomorphic borderlines means that cattle remain partial, shadowy figures as their presence in our lives is always being negotiated on human terms.

How can geographers offer a way out of this bind – these practices of knowing and objectification that position the figure of the human as a foundation and explanatory tool? The remainder of this thesis seeks to explore what geographical modes of enquiry can contribute to these scientific, popular and cultural debates. In the next chapter I want to investigate how social scientists have re-drawn human-animal boundaries: do these scholars offer other vacuums through which animals can become meaningful on more-than-human terms, where the creative, bodily and emotional lives of cattle may be admitted? It is precisely when one asks questions about what human practices mean for cattle who occupy the designations *bos* and *taurine* that one can move beyond the taken-for-granted (often humanist) approaches of the literatures discussed in this chapter.

[8] Please note: comprehensive discussions on the relationship between anthropomorphism and making scientific claims, and the role of anthropomorphism in my own work, can be found in chapter 2 (part 2.1) and chapter 3 (part 3.31).

2. Exploring the borderlands between humans and animals in contemporary theory: relations, places, performances.

2.0 Introduction

In the previous chapter discussion drew on the scientific modes and practices through which cattle become 'known' at different scales, functions and institutional contexts. My concern in this chapter is with examining the theoretical place of animals in the social sciences: how have academics made sense of the relationships between humans and animals?

In the first section *'ecology'* I chart some of the ways in which ecological work has conceptualized the interrelationships between human and non-human organisms. My intention in so doing is to illuminate how ecologists emphasize individual organisms and indeed take organisms in their environment as a focal point of research, ideas that I wish to pursue through the thesis. Moving on, and extending ecological accounts, the second section outlines three bodies of work that have been drawn upon by human geographers as a set of coordinates for exploring animality: *'actor network theory'* (ANT), *'kinship'* and *'hybridity'*. Each of these literatures is enquiring into how all manner of humans and non-humans, organisms and technologies, bits and pieces inhabit the planet in ways that challenge the prevalent nature-culture dichotomy (Whatmore 1999b). The third section seeks to highlight the gaps that emerge in these literatures, fractures that I believe lead many aspects of human-animal relations to be ignored, forgotten and overlooked. Significantly, I argue that these accounts do not pay sufficient attention to individual animals as living fleshy beings inhabiting diverse spatialities. In aspiring to accommodate individual animals in the collective involvement of the world, the remainder of the chapter outlines two bodies of work - *'dwelling'* and *'non-representational theory'* - to conceptualize how animals, as embodied beings, leave their marks and traces through the fabric of places.

My intention in this chapter, then, is to look at the theoretical ideas that underpin some of the scientific (resource), commodified (food) and cultural (art work) narratives encountered in the previous chapter by exploring how social scientists have theorized animals, thus attending to whether other trajectories could be opened up. In this way, the crucial shift being made here is a movement away from remaining solely concerned with what we think and 'know' about cattle to 'who' we are (human identity) in the human-animal borderlands: what happens if 'we' can no longer safely be assumed to be human?

2.1 Ecology: ecosystems, habitats, species

The word 'ecology' was first used by Ernest Haeckel in 1869 to describe the scientific study of the interactions between organisms and their environment (Begon et al, 1996:x). Derived from the Greek word 'oikos', meaning home, ecology might therefore be defined as the study of the 'home life' of living organisms (Odum 1983:4) whose subject matter includes "the distribution and abundance of organisms - where organisms occur, how many there are and what they do" (Begon et al, 1996:x). It is this concern with how a given set of characteristics affect the distribution and abundance of organisms that set ecology apart from other biological and veterinary medicine disciplines. First and foremost ecology is a 'systems science' (Odum 1983), a hierarchical discipline that encompasses three levels of biological matter: an individual organism, a population or community of organisms, and an ecosystem. Secondly, ecologists draw on this linear hierarchy of interrelations to explain, predict and control environments (Begon et al, 1996). In this way, and at one level, ecology is confronted with uniqueness, with millions of different species and billions of genetically distinct individuals all living and interacting in the world, and yet, at another level, ecologists are challenged to reconcile this variability to understand relational patterns that form the basis of predictions (Goss-Custard and Sutherland 1997). It is this grappling of an individual organism in its environment within broader sets of interrelationships that is of interest in this chapter. For I believe that there are two aspects of ecological thought that are appropriate to my endeavour to (re)theorize human-animal relations: firstly, and importantly, the emphasis that is placed upon individual organisms, and secondly, the application of taking an organism in its environment as a focal point in research.

In relation to the first aspect, ecological thought has moved away from an equilibrium or 'traditional' view of nature that theorized all living things as settling into a habitat, into one system with emergent properties (Odum 1983); towards understanding how singular entities determine the properties of populations, communities and ecosystems (Koehl 1989). This theoretical position, that ecologists may know more about the elements comprising an ecosystem than the system itself (Lomnicki 1988), has led to the emergence of a number of studies that seek to appraise individual organisms and their spatial interactions (see Hendry et al, 1997; McGlade 1999) and the behavioural and morphological traits that lead an individual organism to act under different ecological circumstances (see Goss-Custard and Sutherland 1997; Lima and Zollner 1996; Sutherland 1996). Behavioural ecologists, in particular, have been influential in focusing on individual organisms as part of an attempt to learn more about how individuals compete for resources including food, mates and territory (Krebs and Davies 1993); this recognition apparent in work on threatened and endangered species and in managing habitats for conservation (for further detail see Bart 1995; McGregor and Peake 1998; Newton 1995; Sutherland 1996).

Investigating individual organisms, and their relations to other organisms, is often underpinned by a commitment by the scientist to immerse oneself into the lives and environments of the animals being researched. At the initial stages of a project individual organisms are identified according to what they do and how they look (Mech 1995; Schaller 1963), however, over the course of the research such data becomes transformed and enriched according to the relationship that the researcher has formed with an animal. Jane Goodall (1986), for example, spent twelve years researching chimpanzees in the Gombe National Park in Tanzania. Her work is filled with accounts of individual chimpanzees: Charlie, David Greybeard, Evered, Faben, Figan, Flo and so on (see Goodall 1986:60-78); descriptions of how each individual is influenced by the movements of other community members but is ultimately "free to choose where he will go and the routes he will follow to get there" (1986:208):

> The chimpanzees' mental map is extensive and they can easily relocate food patches within the eight to twenty-four square kilometres of the Gombe home range. Their spatial memory is rich in detail; they know not only the position of major foods... but also the whereabouts of solitary trees and individual termite mounds (Goodall 1986:587).

Furthermore, Goodall (1986) has used these insights to draw lines of comparison between the chimpanzees inhabiting Gombe and the home range of other chimpanzee populations, and to understand how chimpanzees mark their territory and compete with other species to maintain space.

Following on, Moss (2000) has spent more than thirty years studying elephants in Kenya's Amboseli National Park. Alongside accounts of how drought, migration, mating, social relationships and population dynamics affect four elephant families, her work recalls events that have taken place in elephant lives. Specifically, her account of an elephant known as Teresia being speared by the Maasai signals the ways in which she attached herself to the lives of individual animals:

> After two more days Teresia could no longer move and stood in the shade of a tree, swaying slightly with unsteadiness and only semiconsciousness. She had reached a state of feeling little and she mostly dreamed, perhaps of vast swards of sweet new grass and clear, cool streams. Or the taste and feel of the sweet juices that squirted out when she crunched down on her favourite wild fruit. Or most likely the smell and touch and sounds of her family... on her final day Teresia grew too weak to stand and slowly subsided onto the ground, first onto her chest and then over on her side. She was conscious of the sounds and smells around her for a little while longer, but soon there was nothing. Her long life was over... I had grown very attached to that funny-looking elephant and I knew I would feel sorrow and loss when she died... Each time I went to Amboseli, or each time Phyllis or Keith came to Nairobi, I asked about Teresia in particular... 'Have you seen Teresia?' 'Is she alright?' (Moss 2000:262).

The second aspect of ecological thought that is appropriate to my endeavour to explore human-animal relations are the ways in which ecologists theorize the environment that an organism inhabits and the role of animals in influencing the ecological conditions of places. In particular, ecological

thinking has moved away from 'static' notions of carrying capacity, climax vegetation and succession theory and how these play-out at an ecosystem level (Warren 1995); to understanding habitats as comprising small scale patches identified according to the homogeneous nature of resources and conditions that they offer organisms (Winterhalder 2001 see also Ellis and Swift 1988:458; Scoones 1996:6). This reordering of the spatial patterning of ecological processes has been influential in investigating how the grazing practices of humans and cattle impact upon semi-arid environments.

Ecological investigations of cattle, then, focus on their role in pastoral economies and the ways in which they affect rangeland. It is important to recognize at this point, therefore, that ecological literature tends to emphasize the characteristics of cattle that influence the botanical composition of pasture rather than cattle as individual animals per se (Sinclair and Fryxell 1985). For example, Dyson-Hudson (1989) spent six years researching the Ngisonyoka Turkana pastoralists in Kenya, describing the migratory patterns and size of cattle herds, the places where they grazed, the type of forage and water available, soil development and predators. Specifically, Dyson-Hudson (1989) places an emphasis on how pastoralists negotiate the topographic diversity of the habitat rather than how animals inhabit the environment. Furthermore, much of the work emerging on this topic tends to explore the relationships and conflicts between pastoralist ways of life and conservation strategies. McCabe (2003) studied a group of Maasai in the Ngorongoro district of the Serengeti National Park, Tanzania over a twelve year period. This piece of research has shown that although the cattle population fluctuates around a mean value the human population is growing. The increasing human population led the Tanzanian government to announce in 2001 that the Maasai would be removed from the national park boundaries, a move which McCabe (2003:78) describes as "an invitation to disaster". To policy-makers the Maasai are perceived as a threat to the ecology and future sustainability of the park, exhausting its resources and causing irreversible changes to flora and fauna; but to McCabe (2003) and his researchers, in practice, the Maasai have strategies to accommodate an increasing population in ways that intertwine with the ecosystem.

All of these examples point towards how ecology asserts itself as moving beyond the 'human', both through its concern with interrelations among biological organisms in the environment and in its attempts to offer understandings of complex situations. However, there are evident gaps in these works, gaps that I argue lead animals and important aspects of their lives to be forgotten and overlooked. For what remains here is a tendency to maintain humanity's position at the top of the hierarchy as part of an attempt to 'get to grips with the world'. This leads animals, as biological entities, to have identities that have already been ascribed, categorized and mapped. With this in mind I want to highlight three inadequacies that emerge from this scientific remit of structuring the world: tensions between ecological subcommunities, the relationship between individual organisms and representational systems of meaning, and the mechanics of ethical dilemmas.

Firstly, animals are caught up in an emerging set of tensions within the ecological discipline. As McGlade (1999:17-18) queries:

> are we really observing a new type of dynamics born out of modelling ecosystems from the perspective of individuals, or are we simply becoming more adept at detecting phenomena that we know exist in nature but have been unable to extract from more traditional models?

This unease, surrounding whether animals should be regarded as individual organisms or genetic assemblages, opens out how 'higher', rare and endangered species - Goodall's (1986) study of chimpanzees and Moss' (2000) research on elephants - are more likely to be regarded as individuals than a herd of cattle in Kenya or Tanzania. Moreover, this biological hierarchy appears underpinned by a notion that an animal as an individual organism can matter only insofar as it can individuate itself:

> This involves the idea that the individual has a self-defined project. It flourishes by becoming what it is impelled to become, not by realizing, or not *just* by realizing the traits that define it as a member of a species... this suggests that the only creatures who can flourish as individuals are those who can live autonomously (Haworth et al, 1998:146, emphasis in original).

A series of dichotomies are emerging here between ecosystems and individual organisms, between 'natural' and 'managed' habitats, and between animal species - rare and commonplace. This leads me to pose a series of questions regarding how to recognize and reconcile individuality with other levels of biological hierarchy. Should individuals only be recognized if they are part of a population and/or species that is rare or endangered? What of individual cattle that are not under threat from extinction, should ecologists also be concerned with how farmed animals are living out their lives?

My second concern with ecological accounts derives from these dichotomies, for when individual animals do become the focus of research they are disclosed as numbers to be monitored and tracked, as geographical distributions to be mapped, and tools through which conservation and management strategies can be devised:

> It is necessary, however, that we be constantly aware of the danger of anthropomorphic bias in the interpretation of behaviour. Observations must be as objective as possible to make them. Intuitive interpretations, which may be based on understandings stemming directly from empathy with the subject, can be tested afterwards against the facts set out in the data (Goodall 1986:58).

A representational set-up still pervades ecology in that individuals are identified using techniques that rely, to some extent, on similarity so as objective and quantitative methods can be applied to take measurements and make recommendations (McGregor and Peake 1998 see also Bradshaw 2004). Above all, this emphasis on making scientific claims about ecology and behaviour leads the

creative, imaginative and probing aspects of the lives of animals that these researchers have experienced to become vacuumed through the formulation of questions, hypotheses and general statements.

My third and final concern relates to the mechanics of ethical dilemmas. More generally, I am left wondering what impact these researchers have on the animals themselves. I think that there are a series of ethical encounters that need to be acknowledged and worked through. The first of these encounters concerns how ecologists access the animals that they wish to research, animals whom may have had little or no previous contact with humans. What might the impact of 'capturing' and 'selecting' individual animals through the use of tagging devices (Niva 1995), or by altering their appearance in some way (see Mrozek et al, 1995) be? Although Goodall (1986) established a set of guidelines in the field that included references to not being within five metres of a chimpanzee and ignoring or moving away from any gestures perceived to be friendly or hostile, she does recall instances of chimpanzees throwing rocks at the human observers following them. The second ethical encounter concerns what level of intervention is deemed acceptable or appropriate in the lives of the animals. Goodall (1986), for example, set up an artificial feeding area for chimpanzees near her base camp so as to facilitate filming up close and to make regular observations on individuals. Moss (2000), on the other hand, watched Teresia suffer in pain over a period of days after being speared by the Maasai, not seeking veterinary advice. How, if at all, could Moss have alleviated Teresia's pain and suffering? What impact did Teresia's injury and death have on other members of the elephant herd?

In summary, ecology appears to remain concerned with how to articulate organisms within a systems framework, thus enacting a representational system of meaning. The question remains then: rather than separating the world out - into biological parts in ways that somehow make-up or constitute a 'whole' – what might it mean to recognize the presence and role of individuals in the fabric of the world? It is with these thoughts and questions in mind in seeking to unravel discrete and relatively stable categorisations and orderings that the chapter now turns.

2.2 Relational Ontologies: ANT, Kinship and Hybridity

In this section I want to engage with three bodies of work that explore the interface between (human) social worlds and (animal) natural worlds. The first, '*actor network theory*' (ANT), is a socio-philosophical approach in which humans and nonhumans, social and technical factors are brought together through the deployment of a common analytical vocabulary (McLean and Hassard 2004).

The second engagement *'a kinship of feminist figurations'*, and the third *'hybrid geographies'*, examines the work of Donna Haraway and Sarah Whatmore respectively; both of these scholars extending the work of, and sharing the willingness of ANT theorists to push categories that do not make sense although each pursuing this goal in rather different ways. What these three bodies of work bring to the fore are the complicated forms of association between beings. In so doing these literatures extend the ecological accounts outlined in the previous section in two important ways. In the first instance these literatures precede the knowledge making practices of ecology in making a movement from fixed and preformed entities to emphasizing collective entities and worlds in the making. In this way they seek to understand how animals can do all sorts of things and lead all sorts of lives that somehow get omitted from scientific accounts. And secondly, in admitting animals into 'the calculus of the world' (Braun 2004b:273), these approaches recognize and challenge some of the ways in which ecologists and other scientists 'speak for' and 'represent' animals. With this in mind, each of the three sections that follow seeks to engage with a series of questions: what theoretical and conceptual apparatus are being offered in opening up human-animal relations to critical analysis? How precisely do these theoretical engagements extend ecological discussions? And, crucially, how do these theories allow us to talk about animals (cattle) and their bodies, lives, and spaces that they inhabit in ways where they are made and becoming rather than made-up?[9]

ANT: Enrolling animals into the collective

Actor-Network Theory (ANT) is most commonly associated with authors such as Bruno Latour, John Law and Michel Callon. In essence, these theorists force us to look afresh at the categories, divisions, and boundaries that frequently divert our attention away from the non-human multitudes that make up our world (Goodman 2001). ANT has been described as:

> [a] useful beginning for journeys out of the impoverished wor(l)d of N/nature, which make it possible to explore the ways in which the entities, capacities and processes conventionally pre-assigned to the spheres of the 'natural' and the 'social' are mutually conditioned and constituted in the everyday business of *living* in the world (Whatmore 1999a:30, emphasis in original).

Social Scientific engagements with ANT include review essays (Murdoch 1997a 1997b), books (Latour 1993; Michael 2000), and special journal issues (Body and Society 2000 Volume 6(3/4) Society and Space Volume 18(2)); and incorporate a diverse array of topics: from agriculture and environmental policy (Burgess et al, 2000) to alternative trade networks (Whatmore and Thorne

[9] The compelling appeal here, then, is to stop separating the world out into representations (human organism, non-human organism) and to become attentive to the fabric of the world itself. With this in mind, I should like to draw attention to how the margins between ecological and social sciences are increasingly blurred. Moreover, within geography, there have been calls for 'practiced conversations' (after Whatmore 2004:1362) as part of a turn towards mapping cartographies of life that attend to the *specificity* rather than the *originality* of all life forms (see Fitzsimmons 2004; Scoones 1999; Spencer and Whatmore 2001; Whatmore 2004). Please note, strands of this creative interaction are more fully articulated and taken up in chapter 5 (parts 5.0 and 5.1).

1997), and from food scares (Fitzsimmons and Goodman 1998) to office management (Law 2000). What they have in common is an attention to challenge the ontological divide established in modern and postmodern thought between nature and society.

> What is analytically distinctive about an actor network perspective are the ways people make the worlds in which they live, in how they strengthen relationships amongst formerly 'passive' actants in commercial networks – the producers and consumers – through a mode of ordering of connectivity which promotes non-hierarchical relationships (Whatmore and Thorne 1997:301).

This call, to stop separating the world into nature on the one hand and society on the other, has been argued foremost by Bruno Latour (1993) who provides a legend for mapping this vast 'middle kingdom' of hybrid non-human entities that increasingly proliferate our contemporary world. The important point is that Latour (1993) speaks of a principle of 'generalized symmetry'. Let us be clear as to what is meant by this: a move away from a priori distinctions between humans and non-humans and a move towards affective modalities (after Whatmore 2002:5) and non-hierarchical relations. Thus, for Latour (1993) agency emerges as a relational achievement gained through interaction within a heterogeneous assemblage. On the one hand, this notion of agency leads Latour and other ANT theorists to draw attention to how scientists account for the way that the world is or seems to be (see Latour 1987). Ecologists, for example, are shown to rely upon a series of instruments, technologies and field notes so as to translate the individual animals that they encounter in the field into a series of statements about populations and communities (Roth and Bowen 1999a 1999b). On the other hand, this forms part of an acknowledgement of the role and function of (non-human) entities in acting through the network in which they are immersed. This is exemplified in a seminal piece by Callon (1986) whom describes the scientific controversy surrounding causes for the decline of the scallop population in St Brieuc Bay. For as marine biologists attempted to implement a conservation strategy, Callon (1986) illustrates the agency of the scallops in refusing to enter the collectors in a sufficient and regular way. Following on, and taking ANT forward into human geography, Thorne (1998) illuminates frequently ignored aspects of the kangaroo trade in Australia. In tracing how the agency of the kangaroo is revoked and restated as the animals simultaneously become cast as protected indigenous wildlife, a national emblem, pest, an export product, and gourmet food, Thorne (1998:175) asks:

> What is happening at the moment of each death? Each is a performance whereby the agency of the kangaroo, in its right to be there, is being forcibly denied by the shooter. Refuting the legitimacy of kangaroos to dwell as individuals, within their bodies, in their places of residence creates a killing space, which profoundly violates a living space.

This philosophical drive towards grasping collective involvement in the world, comes into its own, however, when ANT is deployed to understand the Bovine Spongiform Encephalopathy (BSE) crisis. (De)mystifying and surpassing scientific meaning, Fitzsimmons and Goodman (1998) map the

politics of the crisis to illustrate how official government reassurances and denials of a link between BSE and CJD in humans throughout the 1980s and 1990s still led to a decision to ban the use of meat and bone meal from rendered sheep and cattle carcasses from being given to living cattle through foodstuffs. Moving on, with confirmation of a definitive link between BSE in cattle and CJD in humans, Woods (1998) describes the 'involuntary participation' of cattle in political networks. In particular, Woods (1998) highlights how as the crisis progressed – with the European Commission (EC) banning the sale of meat and products from British cattle and British consumers becoming less inclined to eat meat – cattle were presented in a number of different ways to different audiences. For example, cattle were mobilized by government ministers, opposition politicians, scientists and the agricultural lobby to support their views; represented in statistical formats so that facts could be established and recommendations made on how best to tackle the disease, and as financial values in compensating farmers whose animals were destroyed. These representations, through which assumed properties about the disease were established, thus legitimated a geography of the disease that was drawn for economic and political purposes (Hinchliffe 2001). Furthermore, Goodman (1999) traces the consequences of these representations through the reordering of actants as cattle certification schemes, computerized tracking programmes, export bans, scientific advisory committees and food safety agencies were set up.

Latour and other ANT theorists, then, both critique the scientific practice of, and extend the accounts of, ecologists in offering figures capable of helping us navigate a world unfolding by mediation, transformation and circulation. Its uptake by geographers, as part of attempts to apprehend a world always on the move (Bingham and Thrift 2000), are operationalized through terms such as 'actor' and 'network' that attend to the shifting materialities and socialities of things previously characterized as wholly social or wholly natural. In this way, ANT provides one with a sense of the ways in which animals are being shaped by human cultures and technologies – the need to hunt kangaroos and cull cattle – and afford opportunities to follow the animals themselves as they travel through networks. Moreover, ANT enables one to explore how the boomerang qualities (Murdoch 1997a 1997b) of 'natural' things can come back to haunt human social lives. I am thinking here of how some of the papers cited describe the ability of cattle to harbour and spread disease in ways not fully understood by the scientific community.

A Kinship of Feminist Figurations: primate revisions and dogcultures

> All I am really asking for is permanent passion and irony, where passion is as important as irony (Haraway 2000:172).

The work of Donna Haraway, a feminist scholar and historian of science and technology, spans many issues and disciplines; from literary science fiction to immune system discourses, from

postcolonialism to the workings of information technology, and from primatology to feminist theories of gender. Essentially, Haraway tunes our attention to what counts as nature, who gets to inhabit natural categories and what is at stake in making these judgements. The work itself pitched in terms of 'hybrids', 'cyborgs', 'mosaics', 'chimeras' (Haraway 1997), and operationalized through a variety of figures – coyote, oncomouse, primate, dog. Thus, a cursory glance at Haraway's work might suggest that she has much in common with ANT theorists in sharing a desire to make room for relationships between social and natural worlds, but her work diverges from that of ANT theorists in several important ways. The ontology that Latour (1993) prescribes is concerned with 'actors' and 'mundane things' (Michael 2000), following them through networks as part of an attempt to map agency. Haraway remains critical of this ontology for turning away from social explanations (Murdoch 1997b), arguing that it does not engage with how practices of science and technology are laden by gender, race and class (Haraway 1997). This leads Haraway to trace the 'exotic' practices of science (see Michael 2000), to write from 'inside' a situation rather than describing it, and to explore how enrolments disfigure, disrupt and deform identities through mapping embodied encounters. Haraway's (1997) project, to summarize, is best seen as an attempt to reconfigure, and allow others to reconfigure, what counts as knowledge and what counts as reality in the fields of biology, biotechnology, technoscience, physiology, animal science and genetics (Prins 1995). Moreover, it is intended to guide us to a more liveable place, an 'elsewhere', where the world is best seen as a coding trickster with whom we must learn to converse:

> Who are my kin in this odd world of promising monsters, vampires, surrogates, living tools and aliens?...who are my familiars, my siblings, and what kind of liveable world are we trying to build (Haraway 1997:7)?

Haraway's work is so evocative because the metaphorical figures and entities that she introduces do not resolve into lineaments of humanity but appear in several guises without ever revealing their true nature (Prins 1995). On the one hand, this leads Haraway to challenge scientific remits for structuring the world. In this way, Haraway (1989) sets her work on 'primate visions' apart from studies by scientists such as Jane Goodall (see part 2.1). For while Goodall interprets animal behaviour by plotting the social complexity of a given group (aggression, dominance, affiliation, sex) and then uses these findings to intersect with conservation strategies (See Goodall 1990); Haraway (1989) discusses how monkeys and apes are enmeshed in racial and national discourses of many kinds: primatologist (industrial nation) / primate (decolonized white settler colony). With this in mind, Haraway (2000) argues that scientific knowledge remains constitutively historical and non-innocent. Thus, primates cannot be used to represent 'facts', or enclosed in property form, but rather become instances of 'speculative fiction' where species boundaries are no longer sacred:

> Nothing really settles the separation of human and animal... movements for animal rights are not irrational denials of human uniqueness; they are a clear-sighted recognition of connection across the discredited breach of nature and culture (Haraway 1991:151-152).

On the other hand, Haraway (2003a) has recently included a new member in her kinship of potential figurations: the dog. In this work, 'the companion species manifesto', Haraway (2003a) begins to think through how an ethics and politics committed to the flourishing of significant otherness might be forged by taking dog-human relationships seriously. In telling stories of evolution, love and training, Haraway (2003a) deploys the term 'metaplasm' to signal the remodelling of dog and human flesh. Specifically, Haraway (2003a) explores the changing meaning of a gene and technologies of behaviour management amid genetic scandals; thus debating what constitutes the biology of an animal's breed and the relationships between history and evolution, institutions and science. In exploring these fractures Haraway (2003a) seeks to illustrate how dogs and humans are connected, part of emergent worlds and share joint futures, describing how through her own dog she is:

> tied to indigenous sovereign rights, ranching, economic and ecological survival, radical reform of the meat-industrial complex, racial justice, the consequences of war and migration, and the institutions of technoculture... when I stroke Willem, I also touch relocated Canadian grey wolves, upscale Slovakian bears, and international restoration ecology, as well as dog shows and multi-national pastoral economies (Haraway 2003a:97-98).

In both cases this is about forming a new notion of the subject – subjects to be – and grasping discourses of suffering and dismemberment to empower those put in the position of objects, marginalized and denied any status of knowing (primate/dog). What power relations are operationalized through technology and science? What (embodied) subjects do they seek to fashion? How much suffering is who bearing and how do I respond (after Haraway 2000:147)?

Hybrid Geographies: dis-placing the wild, becoming animal

Sarah Whatmore's (1999a 2002) discourse of hybridity, or 'hybrid geographical enterprise', points a way through the technical and corporeal emphases of the two theoretical communities outlined in the previous sections: the quasi-objects (after Latour 1993) of ANT and the companion figures (after Haraway 1991 1997) of feminist science studies:

> My interrogations of these different efforts to accommodate 'non-humans' in the fabric of the social... involves shifts from intentional to affective modalities of association; from being to becoming in the temporal rhythms of human/non-human difference; and from geometries to topologies as the spatial register of distributed agency. Above all, I want to hold on to the sense in this work in which 'the world kicks back' (Whatmore 2002:5).

In this way Whatmore (2002) draws on Latour's metaphor of the 'hybrid network' with its distribution of socio-material competencies and effects, and the more visceral and corporeal

configurations of energies and elements in Haraway's (1991 1997) work; and combines these works with two other corpus of literatures: bio-philosophy and knowledge practices of everyday life. Whatmore's (2002) elaboration of these bodies of work forms part of an attempt to map new topologies of social life that do not support an entrenched human-animal dichotomy by attending to how 'things' are assembled, gathered and mobilized. There are two aspects of Whatmore's work that I want to sketch out here to indicate her contribution to theorizing human-animal relations: journeying in the company of creatures (do see Whatmore and Thorne 1998:444-450) and the corporeal compulsion of animals in the bodily spaces of humans (after Whatmore 2002:115).

Firstly, Whatmore (2002) calls for a more performative notion of wildlife, where animals caught up in networks of entertainment, conservation and science matter "both as active agents and experiential subjects" (Whatmore and Thorne 1998:444). In a paper with Lorraine Thorne (see Whatmore and Thorne 1998), Whatmore focuses on the shifting positionalities of leopards in Roman times, from an animal's capture to its coercion to perform in gladiatorial combat:

> *Leopardus* would be drawn into a barricaded pit by the noise of a decoy animal fastened to a central pillar. A cage, baited with meat, would then be lowered into the pit, and the leopard would be hauled up for transportation... confined within the metal bars of a cage (*cavea*) or reinforced wooden crate (*daustra*), this arduous journey would be drawn out over a period of weeks by regular, sometimes scheduled, stops in outlying communities and watering places to secure food for the animals and their escort (Whatmore and Thorne 1998:445, emphasis in original).

From the empires of human civilization and the spectacular spaces of wildlife, to the contemporary agro-food system; in the second instance Whatmore (2002) examines how a litany of food scares in Europe have complicated the cartography of connections among animal (bodies) and the ways in which people situate their shopping and eating habits. In a paper on 'Coprosain', a Belgian meat cooperative that distances itself from industrial farming practices, Stassart and Whatmore (2003) describe how the animal iconography of the Coprosain label associates animal well-being with human health, investing the farmer with responsibility for the proper care of his or her animals and for their treatment after they leave the farm (2003:455). The animals in this food network are thus embodied in ways that set them apart from their contemporary industrial body-parts, occupying the 'middle ground' between production and consumption in substantiating trust in the network:

> like the cow that carries the pail of fresh milk, the pig that bears the ham, and the pair of chicks that peck the grain in the farmyard. In contrasting this community of embodied individuals with the indifference of industrial body-parts, Coprosain articulates a collective reclamation of living animals, and farming as husbandry... these creatures articulate animal well-being as the public face of good farming and good eating (Stassart and Whatmore 2003:455).

In these works, then, Whatmore and her colleagues are illuminating the porosity of the imagined borders between wilderness and built environments, cultivation and eating. In so doing Whatmore (2002) deploys the term 'inside' (see also Whatmore and Thorne 1998:437) as a way of contemplating how the everyday worlds of people and animals (leopards, farm animals) are already in the process of being mixed up. But what are the ethical implications of this notion of hybridity in mapping the spatial configurations of subjects and communities conceived of in 'relational' terms (Whatmore 1997:37)?

The ethical communities that Whatmore (1997 2002) maps excavate the tension between ANT's concern with the distribution of material competencies and Haraway's (1997) work on the situatedness of radically different kinds of subjects. For here Whatmore (1997:49) traces how ethical connectivities between "actants at one location in the network are no less intimate or immediate for the physical distance or lack of proximate knowledge involved". In so doing Whatmore (2002) seeks to shift the moral geographies of wild beings from the confines of pristine wilderness by tracing how they make a difference to the ways in which these networks perform (see Whatmore and Thorne 1998 2000). It is here that Whatmore (2002) introduces and develops the notion of individuals in networks in more vivid and tangible ways than in ANT accounts. For example, in a paper with Lorraine Thorne (see Whatmore and Thorne 2000) she traces how two elephants - Duchess and Gay - are caught up in a network of conservation science, both ex-situ through an electronic database and in-situ through the physical fabric of zoological parks. In describing Duchess and Gay's social interactions, their daily routine of having their trunk, mouth and feet checked and attracting visitors at feeding time, Whatmore and Thorne (2000:201-202) draw lines of comparison between captive and nomadic elephants:

> Zoo animals such as Duchess and Gay may be kindred under the taxon *Loxodonta Africana*, but in may other senses they are worlds apart. For all the scrutiny, veterinary intervention and population management, the elephants of Chobe still lead nomadic, socially rich and ecologically complex lives. For all the attention to design, stimulation, and care in her new savannah enclosure in Paignton Zoo, Duchess has become habituated to a more impoverished repertoire of sociability, movement, and life skills that will always set her apart (Whatmore and Thorne 2000:201-202, emphasis in original).

Above all, the personal accounts of Duchess and Gay illustrated here offer an opening to appreciate the micro level moralities and meanings that emerge through practice. For in raising these issues of sensory experiences, daily habits and bonds, Whatmore and Thorne (1998 2000) imply that questions of what is right and wrong, of acceptable and unacceptable practices towards animals, should be traced through networked and hybrid relations.

What these three modes of enquiry - ANT, kinship, hybridity - share in common are the ways in which they challenge analytical categories that would separate the world out - human/animal - in

arguing that such categories must always be understood as precarious, relational and never complete. For the theoretical works of Latour, Haraway and Whatmore recast the world as being thoroughly entangled where natural, social and technical factors are all gathering together attempting to form relations. These literatures, then, can be seen as part of an attempt to sketch a less anthropocentric concept of agency in highlighting the obscured capacities that animals bring to any human centred notion of what is taking place. In particular, these scholars move towards this by using language that curves and twists - 'actors' 'hybrids' 'companions' - and by drawing upon a series of metaphors - 'collectives', 'metaplasm', 'inside' - in ways that resist exact meaning. But however innovative these works are in probing a whole set of beliefs in which understandings of the world have (and still are) premised, in the next section I want to position a set of ideas to indicate some of the shortfalls in these theorizations.

2.3 Theorizing relations... finding individuals

> ... relational thinking does not, in itself, guarantee the kinds of exciting moves to activity that it might at first promise. This is especially the case if 'relations' are treated in the same way that 'objects' were in the bad old days (Hinchliffe 2000a:577).

Amid these relational approaches to understanding the world there are evident gaps in these literatures, gaps which I argue lead many aspects of human-animal relations uncharted. Although in no way wishing to impeach academics that diagram and contribute to the relational ontologies that I have described, my focus in this thesis is with individual animals and their relations to humans and non-humans. For in essence, while relational frameworks recognize the presence of animals, theorists remain, first and foremost, concerned with combinations, collectives and aggregates. Or, in the words of Paul Harrison (2000:514), "feelings, experiences and senses are never 'owned'... rather they are impersonal events and encounters". With my focus on individual animals in mind, I want to elaborate on four sets of problems that these literatures share in common: human bearings and markings, technical dependencies, flows and distributions, and (un)ethical relations.

Human bearings and markings

Firstly, as part of an attempt to grapple with relations between humans, non-humans and the inhuman, there remains a dependency on humanist points of departure (after Wolfe 1998). For what all the theoretical trajectories discussed have in common are the ways in which the debates that are taking place are being conducted "within the human world, won and lost on arguments of human interests" (Woods 1998:1232). There remains, then, an inability to reconcile things labelled 'natural' with those labelled 'social' and this leads me to question where animals are being positioned within relational ontologies and, more precisely, what 'new' forms of agency are being worked through here?

In the case of ANT, animals – kangaroos, scallops, cattle – are central to what is being debated – the export trade, fishing grounds and disease – but this centrality "brings with it neither voice nor power" (Woods 1998:1233) as it is humans who appear to be engaging in network building and constructing the agencies of animals.

In reading Haraway's work too, it can be difficult to decipher and understand what she is moving towards in the stories that she tells: how might it be possible to narrate dogland from the perspective of dogs? To give an example, Haraway (2003a) describes the 'Save-a-Sato Foundation', a dogland cyberculture that rounds-up strays from the streets of Puerto Rico and re-homes them in the United States. It is here, in particular, that I think Haraway fails to fully contemplate how the kinship making apparatus that she strives towards remains firmly in the control of humans. If one were to look at this re-homing scheme from a dog's perspective the following questions seem pertinent: do some dogs want to wander the meandering streets foraging in dustbins? What are the conditions like in the shelter? How are the animals transported to the United States? Importantly, what adoption procedures are followed and how do the dogs adjust to having a human imposed structure to their day, determining what and when they will eat, and when they will be taken for a walk?

At first glance, Whatmore (2002) (see also Whatmore and Thorne 2000) appears to overcome some of these inadequacies in opening up space to contemplate the role of individuals in networks. However, a significant problem that I have with this work is her tendency to focus on the 'fleshy traffic in and through things', shifting registers between animal and meat, calories and flavours (Stassart and Whatmore 2003:450). Indeed Whatmore (2002) does not push her framework forward to consider how we might encounter animals face-to-face in an intimate way: can one move beyond the choreographed display that is feeding time at the zoo to spend time in the company of Duchess and Gay? This point chimes with Philo (2005:830) who calls for "more detail here on the embodied performances – and perhaps too the felt 'emotions'... which arguably would have allowed more of a window to be opened on the whole question of becoming elephant".

Technical dependencies

My second concern is that relational ontologies such as those pursued by Whatmore (2002) remain a little too preoccupied with tracing technological devices and discursive codes rather than considering animals themselves as embodied living beings (after Bingham and Thrift 2000). Thrift (1999), for example, identifies an incoherency between cognitive, representational ways of knowing the world, and visceral, corporeal ways of knowing the world. Moreover, he argues that this concern with apprehending the 'mixing' of entities leads to the haunting quality of beings and things in a network being missed:

> Giving voice and giving a voice to this sensuous knowledge is, indeed, a ghostly matter but one with important political consequences, in terms of both how we value lives past and present and how we activate the potential for disclosing new ways of living (Thrift 1999:313).

Animals are followed through networks in political documents (written words) or public enquiries (spoken words) as they become caught up in rural conflict, disease crisis or food scare. This leads theorists to ignore the life experiences of, and human practices towards, an individual animal. Although Fitzsimmons and Goodman (1998:214) acknowledge the corporeal dimensions of CJD, where symptoms include dementia, memory loss and eventually death, how can these concerns be reversed and play it out in relation to cattle? What of the cow infected with BSE stumbling in the yard? What I am suggesting here is that the complex social experiences of living cattle are perhaps just as important as following them through a network assuming that what they will become is merely the product of feed, genes, hormones or disease.

Flows and distributions

Thirdly, and in pursuing this line of enquiry towards more bodily orientated geographies, relational ontologies tend to neglect the spaces where animals are living out their lives. On the one hand, what I am referring to here are the ways in which Haraway (2003a) does not provide any sense of dog shows or what an agility class entails, and nor do Stassart and Whatmore (2003) sketch out in any depth the farms that cattle inhabit. On the other hand, I do not want to be misunderstood here, for I am not suggesting that the world can be cleaved apart into neat boxes – that kangaroo lives are somehow confined to a particular territory or similarly that a farm is the only context to apprehend cattle lives. Rather I want to make it clear then that I too believe animals (and humans) are implicated in relational ontologies and do indeed share their lives with countless other beings and things that extend beyond these seemingly actual, real and material places. I do, however, want to argue that this 'extension' needs to be theorized in ways that recognize (individual) animals and attend to human-animal differences (after Callon and Law 2004). To excavate this point further: what of animals who do not conform to (human) expectations of them in networks of science, industry and commerce? What about individual animals that are caught up in the 'nowhere that is somewhere' (after Hetherington and Lee 2000)? I think attending to what happens in these 'non-places' (Crang 2002:569) is important in acknowledging the material and immaterial presences and absences of animals and their ability to shape, transform, and afford the prospect of different encounters with humans (after Davidson 2003). In this way, how might cattle be seen as blank figures?

My use of the term 'blank figures' derives from the work of Hetherington and Lee (2000) (see also Hetherington 1997a; Hetherington and Law 2000) who have argued that any understanding of relationality needs to take into account the possibility of alterity within the relations that are of

concern (Hetherington and Law 2000). Emerging in response to the beliefs of ANT theorists who suggest that all elements, regardless of their ontological status, are open to being related to one another (Hetherington and Law 2000); the concept of the blank figure is offered as a way of enabling the possibility for an understanding of otherness that exists outside of contemporary relational thought:

> The blank figure is a non-representational figure that appears within the midst of representations as a source of absence that has become visible. The blank figure, constitutionally underdetermined, having no stable identity of its own, is the 'pre'sent absence' that allows for relations to be made possible (Hetherington and Lee 2000:173).

The presences and absences that blank figures enact provide a spatial imaginary that is more topologically complex than Euclidean, network and fluid spaces (Callon and Law 2004). The concept addresses the uncertainty that otherness brings in holding materials in space together in some semblance of order, while remaining an emblem of ambiguity and undecidability (Hetherington and Lee 2000). For example, Hetherington (1997a) investigates how 'Ozzy-the-owl', a seventeenth century jug on display at the city museum and art gallery in Stoke on Trent, becomes a fold in the museum space that allows for new, unfixed and partial perspectives to come into view:

> What Ozzy does is simple (folds are easy to make) but his spatial and discursive effects are complex, so complex in fact that we can only begin to represent just a bit of them (Hetherington 1997a:216).

From the unintended display case in which Ozzy is kept and the natural history guide that he has replaced, to his starring role on a television programme that facilitates his transformation from being an afterword to the preface of the ceramics display; in these ways Ozzy ruptures narratives of place and aesthetics and becomes capable of acting when looked at through the relations established through the heterogeneous networks of the gallery (Hetherington 1997a:206-207). A series of gaps are being opened up here in ways that interrupt juxtapositionings of human (museum visitors) and non-human (display jug) – gaps that enable other sets of relations to emerge but that somehow become forgotten in academic works. Attending to these gaps is important, for as Thrift (2004c:176) argues:

> 'emptiness' lies at the root of our being, producing senses of the rightness and wrongness of the world so fundamental that we find it difficult to articulate them or to consider that these senses could have been otherwise.

Here Thrift is hinting, I think, at how literatures on otherness can be taken beyond figures of spacing, moving towards the intimacy forged between humans and animals and the ethical relations that are cast.

(Un)ethical relations[10]

My fourth, and final, concern with relational approaches is that they can appear so pre-occupied with relations that animals are not identified as "distinct subjects, worthy of epistemological, political and ethical distinction" (Jones 2003:293). Specifically, Castree and MacMillan (2004:480) wonder how it is possible to operationalize a 'non-antrop-/ecocentric politics' through the legend that Whatmore, along with others, provides: what kinds of understandings of, and relations with, animals are emerging here and to whose benefit? Describing the ways in which an elephant is mobilized through a database (see Whatmore and Thorne 2000), or the socialization and training of dogs (Haraway 2003a), is nevertheless important but can also imply passivity and detachment. Part of this stems, I would argue, from a concern with collective rather than individual entities. This is exemplified in Latour's (2004a) recent concern with forms of government:

> Instead of *two* distinct arenas in which one would try to totalize the hierarchy of beings and would then have to try to choose among them (without ever being able to succeed), political ecology proposes to convoke a *single* collective whose role is precisely to debate the said hierarchy – and to arrive at an acceptable solution. Political ecology proposes to move the rule of the unifier of the respective ranks of all beings out of the dual arena of nature and politics and into the single *arena* of the collective (Latour 2004a:29-30, emphasis in original).

As such Latour's (2004a) 'politics of nature', his 'common world', is governed by two houses: an upper house that will answer the question 'how many are we?' and a lower house that will answer the question 'how can we live together?' Working through these matters is an ongoing process comprising the skills of scientists, politicians, economists, moralists, administrators and diplomats. In this way, Latour (2004a) is sketching out a world where as many constituents as possible have the right to be heard, to object, to appeal. For me, however, the blueprint that Latour sets out in this work, with the legacy of the collective therein, remains troubling. For while Latour (2004a) does indeed raise crucial, ethical, questions concerning the exchange of competencies in human-nonhuman associations – how can those in whose name we speak, speak for themselves? Who is speaking? Who is acting? Who is able? – he fails to provide adequate answers. This leads me to wonder how cattle, and other animals, might count as actors deserving of consideration. Importantly, will animals remain trapped in the cave from which Latour (2004a) seeks to set them free – only appearing as silent beings caricatured by human members of the assembly? Attending to this is important, for as Jones (2003) points out, human-animal relations in farming can be violent and antagonistic.

Following on, this emphasis on collectives, associations, imbroglios, lead theorists to insufficiently recognize the unequal harm that human practices can impart on animals. Here I am thinking in

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[10] My use of the term '(un)ethical' derives from Jones (2000).

particular of the work of Haraway (2003a) whom I believe does not sufficiently attend to the unjust practices and relations that can unfold in the stories that she tells. For example, during training Haraway (2003a:62) describes how:

> dog and human figure it out, if only for a minute, how to get together, how to move with sheer joy and still cover a hard course, how to communicate, how to be honest.

Rather than the 'sheer joy' that Haraway perceives, I want to suggest that the agility course tells us more about how animals are enrolled into money, status and sociability and how they can be seen as belonging to humans. Instead, how might Haraway (2003a) re-tell these stories in ways that admit dogs as living creatures? What is an animal's experience of training – frustration, tiredness, anticipation of rewards or punishment? Tuan (1984), for example, describes the dependency of pets on their owners as illustrative of an unequal relationship. On the one hand, pets can serve as friends and companions; on the other hand, they become dispensable resources. This point can also be raised in relation to cattle that humans breed, grow and slaughter.

What binds these four sets of concerns together are the ways in which they illuminate how the literatures presented so far in this chapter remain, in some sense, full of asymmetries, privileging and mobilizing the figure of the human, sometimes unintentionally so: from the actors in Latour's (1993) naturecultures and prevailing 1+1 logic of Haraway's (2003a) companion species manifesto to Whatmore's (2002) heterogeneous entanglements. Thus, what I am left with is a limited understanding of the ways in which animals enmeshed in these collectives 'kick back' (after Whatmore 2002:5). Rarely, if at all, in these literatures are animals disclosed as *living sensate beings with experiences of their own.*

With this in mind, the crucial shift that I want to make in the rest of this thesis is to theoretically excavate the ways in which it may be possible to trace individual animals within relational ontologies. For the lack of attention granted to animals as individuals needs to be addressed for two significant reasons. Firstly, the corpus of literatures presented in this chapter can become constraining ontologies. Davies (2003:411), for example, warns of the need to keep agencies, entities and animals from becoming too entangled, without simply reasserting a human-animal divide; the question still remains then: how can one excavate the possibilities opened up by these theoretical approaches without as humans seeking to have the final word (after Hinchliffe 2003:222)? Attempting to provide answers is not easy, for the literatures discussed in the first chapter, and the theoretical ideas presented thus far, describe the myriad ways in which cattle are fashioned by humans. As Buller and Morris (2003:217) assert:

> farm animals... will always be largely constructed and confined by their human-serving functionality... as the property of human individuals, collectives and organizations, their geography and spatiality will – to a greater or lesser extent – be intricately linked to our own. And yet... we do not hold total sovereignty over them... even farm animals remain, for all their breeding, selection, docility, and husbandry, beyond our complete societal appropriation.

Secondly, this constraining ontology leads to the undoing and dissolution of animals from the accounts that are being provided. As a consequence of this my aim in this thesis is to think through how cattle may be seen as *living fleshy beings, as individual entities, corporeally and perceptually engaging in the worlds that they inhabit* - of how they are 'beyond our complete societal appropriation'. What I am calling for then is a reconfigured notion of what it means to be an animal – becoming, not made-up – in a relational world. As part of an attempt to open up the possibilities of accommodating individual animals in the collective involvement of the world the remainder of this chapter outlines two strands of work - *'dwelling perspective'* and *'non-representational theory'* - that make a series of theoretical manoeuvres that shift sites of reference: from understanding human-animal relations as asymmetrical and solely on human terms to excavating what the nature of these relations might be from an animal's perspective; from concepts of Euclidean space and place as a fixed location on the earth's surface to places as being, becoming and co-constituted by animals; and from cognitive, representational ways of living in the world to non-cognitive embodied practices.

2.4 Dwelling: Situating animals in place

> Form is not brought into the world out of nothing. It is of the world (Whatmore, undated:6).

In this section of the chapter I want to move beyond understandings of human-animal relations as they are mobilized in relational ontologies, to look instead at how these relations materialize in other orderings, paths, links and energies that leave their marks and traces through the fabric of places. This is because relational theorists often fail to recognize how the messy materialities of human/animal 'comings-together' have qualities that can be seen as forms of place formation (Watson 2004:152), thus leading Bingham and Thrift (2000) to argue that many of these works miss 'the sizzle of the event'. And yet for geographers place remains a critical aspect of everyday life which needs to be explored (Cloke and Jones 2001). How then can animal spaces be imagined without making them timeless and spaceless abstractions (after Hinchliffe 2003:215)? Dwelling makes such a shift towards non-human spaces in providing resources for engaging with geographies

of the living, paying attention to how beings change socio-material possibilities in the fabrications of place[11].

Dwelling emphasizes the 'agent-in-its-environment', or what phenomenology calls 'being-in-the-world', as opposed to a self contained individual confronting a world 'out there' (Wylie 2003:143). Originating in two of Martin Heidegger's familiar texts 'poetically man dwells' and 'building dwelling thinking', the notion of dwelling that I am working with here derives from Heidegger's statement that to be a human being is to dwell, and that this is not an achievement by some humans some of the time, but applies to all humans all of the time; the words used:

> We do not dwell because we have built, but we build and have built because we dwell, that is, because we are *dwellers* (Heidegger 1971:148, emphasis in original).

Dwelling, its reworking by the anthropologist Tim Ingold (2000), and use therein by geographers, implies a shift from seeing the relationship between people and the environment as a 'building perspective' where human mental constructs are imposed (built) upon the world, to a dwelling perspective where any act of building, living and thinking is formed in the context of being-in-the-world (Jones and Cloke 2002:81). In this way:

> Human beings do not in their movements, inscribe their histories upon the surface of nature as do writers upon the page; rather, these histories are woven, along with the life-cycles of plants and animals, into the texture of the surface itself (Ingold 2000:198).

This requires people to pre-empty categorizations and above all to understand animal worlds in ways that do not privilege the knowledge of humans. Significantly, Ingold (2000) argues that the animal organism fits the world to itself by ascribing functions to the objects that it encounters:

> the environment in which it lives and moves (its *Umwelt*) is the projection or 'mapping out' of its internal organization onto the world outside its body... Take away the organism and the environment, in this sense, disappears with it (Ingold 1989:504, emphasis in original).

Ingold's use of the term 'umwelt' stems from Jakob von Uexküll who published 'Umweltiehre' and 'Umwelt und Innenwelt der Tierre' in 1909 (Dusenbery 2001:1). Von Uexküll stressed the uniqueness of the sensory worlds in which different animal species find themselves living and, as a consequence, underlined the importance of knowing the particular features in the environment relevant for them. The term 'umwelt' has become a spatial metaphor to describe the world as constituted through the specific life activity of an animal (Ingold 1989) and while "we human beings

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[11] I should like to make it clear that in the theoretical enterprise being worked through here it is not my intention to set up a series of dichotomies between dwelling and relational ontologies (part 2.2). For I believe that dwelling can be seen to coexist with network, hybrid and kinship trajectories by extending the spatial narratives and embodied practices of humans and animals in collectives (Jones and Cloke 2002:51-54 see also Watson 2004:152).

cannot enter directly into the *Umwelten* of other creatures, but through close study we may be able to imagine what they are like" (Ingold 2000:176, emphasis in original)[12]. Ingold (2000:187), drawing on von Uexküll's example of an oak tree, describes:

> the many inhabitants of the tree: the fox, the owl, the squirrel, the ant, the beetle, among countless others. All, through their various activities of dwelling have played their part in creating the conditions under which the tree, over the centuries, has grown to assume its particular form and proportions. And so, too, have human beings, in tending to the tree's surroundings.

The dwelling perspective, in its adaptation by Ingold, allows one to recognize how humans and animals are actively engaged in creating the conditions and moment in the life of any feature - an oak tree - through their ongoing involvement in the world (Ingold 2000). This enables one to engage with the materiality of a site in ways that undermine the tacit understandings of place that exist under representational perspectives, a move away from viewing place on a plane of reality to one of immanence and emerging dwelt practices. And it is here, I believe, that dwelling can lead to a rethinking of agency, in being sensitive to the otherness of animals and of animal bodies in place (after Jones 2003:300) – fox, owl, squirrel, ant, beetle.

In taking valuable insight from various forms of this phenomenology of being-in-the-world, geographers have been particularly sensitive to interlinking the meanings and agencies of animals in particular situations and locations. One such strand has sought to address the production of landscapes over time, revisiting rural pasts. For example, in his examination of the re-introduction of reindeer to Scotland in 1952, Lorimer (2004) describes the micro-geographies of the reindeer herd: how their daily travels mirror traditional routes; the pathways that are followed according to whether reindeers want to bed down for the night, linger or muster; and notes how an assortment of buildings and landmarks, weather and trees are all influential in marking out the grazing grounds. Another strand is working towards a mode of urban analysis and policy that admits animals into the ecological fabric of the city (Whatmore, undated). Whatmore and Hinchliffe (2003a 2003b), for example, conceptualize urban areas as 'living cities', tracing the habits and manners of all kinds of city dwellers:

> encounters in which your paths cross come to mind - scratching an insect bite; the arresting call or flight of birds; clearing the mess that night scavengers make of your refuse; the unbidden plants that sprout in building and pavement cracks; such uncanny intimacies are so thoroughly erased from analytical and policy accounts of what cities are and how they should be (Whatmore, undated:1).

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12 The work of von Uexküll is now finding its way into ecology. Specifically, 'sensory ecology' forms part of an attempt to explore an individual organism's response to sensory information perceived in the environment (do see Dusenbury 1992 2001).

Attending to this 'animalian erasure' lies in apprehending the 'here today, gone tomorrow' scripting of the creatures themselves (Whatmore and Hinchliffe 2003b), and assessing whom or what gets to count in urban life. As Wolch (2002a:733) puts it:

> federal law mandates water-quality standards for all waterways, but these standards are designed for humans; what is tolerable for humans is not necessarily tolerable, for, say, frogs. Does this mean that the United States Environmental Protection Agency needs amphibian water-quality standards for urban watersheds? The answer is probably yes - and this implies the need for an astonishing amount of research and, ultimately, urban regulation.

Binding these examples together are the way in which they foster a sense of how humans may be able to read the landscape in a variety of other guises (Plumwood 2002). The tracing of bodily presences and absences of animals - reindeers, birds, insects and amphibians - open up the spatio-temporal bounds of dwelling. On the one hand, dwelling provides a means of acknowledging the enduring and abiding presence of animal inhabitants (reindeer/grazing grounds). On the other hand, conceptualizations of dwelling indicate the momentary and transitory lives that animals lead (birds/scavenging, migrating). Together, this recognition that human and animal worlds are lived in before they are made (Whatmore and Hinchliffe 2003b) raise pertinent ethical issues. Regarding human-cattle relations, the following questions can now be considered in a critical light: how are cattle creative in setting the conditions under which farms are evolving? How are farms filled with the histories, stories, and presence of past herds? How do the field, yard, milking parlour, become part of the ongoing and immanent-momentary life process of the farm (after Ingold 2000:188)?

Each of these theorizations of dwelling, then, facilitate an understanding of the embodied nature of human and animal experiences in the physical world, of how beings move in, across and beyond places through diverse mobilities. In some way, however, even though the philosophical lineage endeavours to move against the sterile and representational setup of idealist and realist views of the world, three limitations resonate with regard to the theoretical and empirical foci of dwelling: human figures, conditions of dwelling, and the relationship between embodied practices and textual engagements. I will now outline each of these limitations in turn before addressing how I might reconcile these contradictions through my work.

Firstly, many of the commentaries discussed can be traced back to the phenomenological legacy of Heidegger (1971). For some (see Cave 1982; Glendinning 1998) this theoretical heritage appears troubling as only humans appear to have access to the world as world. It is clear from his texts that Heidegger (1971) believed that humans possess certain fundamental characteristics that set him or her apart from other living things; animals do have a world to be deprived of but it is not the same kind of 'being-in-the-world' that belongs to humans. In contrast to this interpretation, Calarco

(2004:29) argues that Heidegger's work contains a non-anthropocentric commitment to approaching animals on their own terms. For in practice, Heidegger's repetitive statement that the 'animal is poor' is applicable only when the non-human animal is compared and contrasted to human animal capacities for world formation:

> only from the human perspective that the animal is poor with respect to the world, yet an animal being in itself is not a deprivation of world (Heidegger 1995:270-271 cited in Calarco 2004:28).

Thus, while I agree with Ingold (2000), drawing on von Uexküll's work (1956), that I cannot directly enter the umwelt of a cow, I do think dwelling can be used as a pathway in apprehending the creative, relational activities in which cattle engage in ways where they are not being appropriated on human terms (see Glendinning 2000:29).

Secondly, it is important to remember that humans remain influential in setting the conditions in which animals dwell. Cloke and Jones (2001) discuss how dwelling can "take bitter, tragic and contested forms" (2001:652) and "be just as rich, intimate and hybrid, even if all the qualities are terrible in form" (2001:664). Consider the following empirical instances: a bull being de-horned without anaesthetic, a calf being hit with a stick at market, a cow being electrically prodded towards a slaughterhouse conveyer belt, or cattle living out their entire lives in indoor sheds. With these forceful farming practices in mind Cloke and Jones (2001:650) warn of the need to:

> guard against understandings of place which are overly cosy - even romantic - which are fixed and unidimensional and which too easily claim a sense of authenticity.

Nevertheless, I think that dwelling moves away from humans as 'representers' of the world, and enables one to recognize how animals mark places, the enduring traces and presence/absence that can be felt on the farm, at market, and the slaughterhouse. And it is here, I believe, that one can begin to trace the ethical connections between humans and animals as part of being-in-the-world which inevitably becomes a being-with-others (after Glendinning 1998:57). The call here is to keep ethical potentialities open, to attend to moments that proceed from practical skills rather than deliberation or the production of universal rules (Hinchliffe 2003:222) - how to get a cow into the slaughterhouse - and importantly to ask: what might an animal's perceptions of its life and living spaces be?

Thirdly, and finally, critiques of dwelling point towards the establishment of a new series of binaries between embodiment and vision (Wylie 2003), written texts and practical experiences (Hinchliffe 2003). To respond, far from a fixation with boundary drawing, if importance is to be placed upon animalian ways of dwelling in the world, a plethora of human-animal engagements and habitations,

this 'framing' and structure of ideas is excavated. In this regard, Hinchliffe (2003:216) argues that more, and not less, textual engagement is needed, suggesting text is forever opening up rather than closing down, constantly pursuing that which is on the move.

The challenge and task that lies ahead then is how to acknowledge the ways in which these multi-sensuous engagements through texts, bodies and practices come together and play out in place – from the time deepened and longstanding to the fleeting, momentary and temporary nature that the presence of animals bring. Furthermore, the focus on practices - or what humans, animals and material objects do - requires a methodological investment in more experimental approaches: how, methodologically, can one amplify bodily registers, senses, feelings and habits (after Harrison 2000)?[13]

2.5 Non-representational Geographies: animals and performance

So far in this chapter we have encountered the ways in which things are gathered or emerge in the world through their engagement with sociality, from the characters and figures that populate the works of Haraway (2003a) and Latour (1993), to how relations are formed from dwelling in the world. In this way, discussion has shifted from providing accounts of the ways in which worlds are constructed, ordered and built, to fostering a commitment towards the mundane, the experimental and uncertain. In this section I want to attend to how we might theorize what has happened and might be happening in a world of human-animal encounters that reaches beyond the phenomenological and cognitive: what of the emotions, sensations and, importantly, the body unfolding in places? How can one pursue a 'vitalist way of thinking' - a stance to *feeling* life, a double sense of both grasping life and having an emotional attunement to it (after Thrift 2003b:319, emphasis in original)?

> The nonhuman counts. Not as a back-up or an interface or a possession but as a more or less extensive architecture of action whose concerns do not just impinge on "us" but make "us" what "we" are (Thrift 2004d:126).

As part of an attempt to apprehend the ways in which non-human animals present themselves to humans I am drawn to the work of Nigel Thrift, and his non-representational theory (NRT), who turns our attention to everyday practices that usually go unnoticed in the background of our lives, practices which take place in an immediate and indeterminate way, in-between what we currently frame as behaviour or action (Thrift 2000c:274)[14]. In so doing, Thrift (2004b) draws on five main

[13] Please note: strands of what this methodological investment might demand are taken up in the following chapter (part 3.2).
[14] For comprehensive reviews of non-representational theory see Thrift (1999 2000a 2004b).

bodies of literature finding their way into geography: the work of Deleuze and resonances of affectivity; non-cognitive embodiment; notions of objects derived from Latour (1993) and other ANT theorists; psychoanalysis; and performance. What all these works share is a 'sense of free play which would let creativity back in' (Thrift and Dewsbury 2000:414). Although each of these literatures are in no way exclusive and indeed share elements in common, in what follows I want to focus on one of these architectural strands: performance. Following Thrift, who has described performance as providing a persuasive metaphor in the human sciences and indeed life itself as being a constant rehearsal (2000a:225), performance is making a series of theoretical and practical pushes into the social sciences because it:

> asks the right questions in the right way, born out of an intense desire to work on the imagination in order to add something into the world, in a world in which constantly altering demands to perform have become commonplace (Thrift 2004d:129).

I am introducing work on performance because I believe a performative agenda offers three kinds of resources that can be applied to theorize human-animal relations. Firstly, performance shares with, and extends discussion of, dwelling in remaining dedicated to experimentation. Specifically, it is underpinned by a conviction that something different will emerge in any given performance (Thrift 2004d). Secondly, performance comes to admit encounters and interactions that are partially invisible and all too often excluded from what counts as thought (Thrift 2004b). I am referring here to a turn to the 'bodily' (Thrift 2000a 2000b) and the potential therein to admit other animalian forms of agency. Thirdly, and weaving these two strands together, performance has the ability to perturb (Thrift 2004d). This is, then, a politics concerned with 'people' (and 'animals') to come rather than being drawn into a priori segmentations that society tries to qualify and in this way is committed to repositioning intellectual territories of expression (Thrift 2004b:93). I want to illustrate how some of these performative elements have been taken up in the study of human-animal relations by working through three sets of examples: 'mediated performances', 'fluid performances' and 'no-purpose performance' (after Read 2004). Each of these examples are concerned in one way or another with the notion of performance and all are seeking to breathe life into static categories of 'human' and 'nonhuman' they do, however, pursue this aspiration in quite different ways.

> ... the trainer arches out in front of the orca, his feet balanced on the nose of the animal, arms extended to the side and behind him... in this position, the whale pushes him all around the tank of water at rapid speed, white foam flying from the trainer's chest. At the end of the circuit, the trainer whistles, and the whale drops him off at the cement platform, giving him just the right boost to hop out of the water and land seamlessly on his feet (Desmond 1999:227).

The description above is an account of the relationship between bodily displays and bodily actions - who does what, how and with whom (Desmond 1999:252) during the Shamu whale ballet

performance at a Sea World park in the United States. On the one hand this performance is rehearsed; the ballet is a carefully crafted design of movement, showing off pleasing designs and shapes to the audience and where the animals are rewarded with pats, hugs or fish once the show is over. On the other hand, in the account that Desmond (1999) provides she alludes to a border crossing, where people slip into the water - as the trainers do in the moment recounted above - and where the whales move into the human environment by getting the audience wet during another segment of the show. The dance that the whales are reciting is an example of 'mediated performance', that is, human-animal interactions are staged in specific times and spaces. Moreover, much work on human-animal relations that has tentatively engaged with performance has been concerned with the role of animals in theming contexts, spaces and experiences. I am thinking here of work on the changing nature of animal display in zoos (Beardsworth and Bryman 2001; Benbow 2004), the pursuit of animals in hunting (Marvin 2004) or the kill floor at the slaughterhouse (LeDuff 2003). This literature, however, tends to remain focused on human understandings of the performance - exhibiting, chasing, butchering - and this leads me to wonder if it is possible to move beyond the scripting of the show, or hunt, to consider what the practices mean for the animals themselves. For example, how is the environment that Sea World provides altering the life practices of the whales i.e., sensations of the ocean and abilities to catch fish?

The second notion of performance that has been used to study human-animal relations is as a process, an ongoing and a becoming (Clark 2004). In particular, academics have been drawn to writers such as Guattari (2000) and Deleuze and Guattari (1988) to move away from purely discursive descriptions of life (animal form, representations, interpretations, meanings) towards non-reductive materialist ontologies of difference and multiplicity (Urpeth 2004). The emphasis here is on bodies-in-formation, of how humans may open themselves up to nonhuman possibilities (Dewsbury 2000) - a matter then of learning what our (human) bodies are capable of becoming (Ansell Pearson 1999; Buchanan 1997). These ideas have been extensively worked through in art, theatre and dance (see Baker 2000 2003; McHugh 2001) but have also been employed by contemporary cultural theorists (see Butler 1993; Game 2001 Probyn 1996). Moreover, geographers have begun to make more explicit reference to these works in theorizing the non-human. I am thinking here of David Lulka's (2004:449) attempt to articulate a Deleuzian theory of wildlife. Focusing on bison management policies in the Yellowstone National Park, United States, he illustrates how the movement of animals is an immanent process that differs from the wildlife refuge produced in management policies and legal documents:

> a population remains constant in number but nevertheless changes its geographical distribution, its boundaries, and its densities is no longer the self-same population. The multiplicity of the population becomes irreducible to identity as their dimensionality constantly shifts. As a result of such movements, a population becomes decentred and enters into new relations with itself and the surrounding environment. It can no longer be

> the self-same population as the members that constitute it encounter one another from new angles, perspectives and conditions of existence (Lulka 2004:451).

What, precisely, happens in this move from individualities towards herd modes and multiplicities that Lukla (2004) and others are suggesting? How can an animal be recognized as an animal? I would argue that these works fail to sufficiently consider the umwelt of an individual animal and this leads to a "violent humanization of animal worlds" (Ansell Pearson 1999:189). For this 'undoing of the animal' compromises its very difference - the animalness of animals - and all the philosophical and psychological apparatus that this brings. Ultimately a sense of 'co-production' is somehow obscured in the performances depicted in these works. On the one hand, I acknowledge that many of these literatures would dismiss the claims made by phenomenologists whom conceptualize a coherent bounded (animal) body subject (part 2.4); on the other hand, I would argue that these 'mediated' and 'fluid' notions of performance are underlined by the fixity and stability from which they wish to flee.

I want, then, to draw on a third notion of performance that I believe may offer a way out of the impasse posed by these conceptualizations, impressions that so often turn animals into performers on human terms. This third approach does not theorize animals as a product or process (becoming), although these strands inevitably figure into it, but rather recognizes animals as individual embodied performers and centres of knowing.

I am referring here to the work of Alan Read, and in particular his call for a 'no-purpose' approach to performance (2004:12). This literature is still speculative and as such remains under-theorized, the origins however can be found in Read's ongoing study of the 'unaddressed'. Read (2000) has sought to illustrate how the 'unaddressed' is distinct from the addressed, scripted and celebrated by reflecting on the simplest of gestures - his daughter's wave during a school nativity performance:

> My wave is saying hello, it greets and welcomes. Intended to draw us closer it falls short because it believes it is reciprocating in an ontologically equivalent manner the wave that the child proffers. But my daughter tells me, and it surprises me, that her wave was not saying 'hello' but 'goodbye'. She was bidding me farewell from the beginning... the entrance of the child to the performance is simultaneously an exit, from where does the child believe that they have come in order to leave, and where might they be intending to go (Read 2000:63)?

More recently, playwrights, designers and directors have begun to explicate the unaddressed performance of animals. The call here is to (re)explore animality through an interest in animals as and for themselves – 'to let them be' – particularly within staged or 'mediated' performances. Or, as Ridout (2004:64) explains:

> The strangeness of the animal on stage comes not from the fact that it ought not to be there, has no business being there, but rather in the fact that we sense there is suddenly nothing strange about it being there, that it has as much business being there, being exploited there, as any human performer. What we experience is a form of shame, I think, at being discovered in our own acts of domination, over animals and ourselves... what we are ashamed of is that we never saw it before, not until the animal returned to the stage and made us stare it in the face, and thus know it, feelingly.

On the one hand, Ridout (2004) is seeking to explicate the doubled nature of humans on the stage. In this way, and returning to Sea World, the trainers' consciousness in the performance indicates their agency, but also points towards their own confinement in the training of whales, the scripting and representation of the show. On the other hand, this 'no-purpose' and 'unaddressed' performance is being shaped by a postmodern ethical philosophy that is opening out new understandings of animality. Williams (2000), for example, describes the inability of the animal to pretend (to act in ways framed by human meaningfulness) as the foundation upon which human-animal reciprocity depends. In other words:

> The very 'lousiness' of animal actors, in terms of their inability to sustain fictive bodies and affect a consciously ironic meta-braiding of a not-self with a not-not-self, makes for a particular quality of face-to-face encounter (Williams 2000:35).

It is this inability of the animal to adopt and sustain fictional ironies that leads to a form of *presentness* (after Read 2004:5) where animals might communicate in ways where there is no presumed or intended audience[15].

What does this 'unaddressed' no-purpose performance bring to theorizations of human-cattle relations? Firstly, I think that it may invite new means of expression and recognize animalian modes of agency. On the one hand, I am mindful of the routinized performance that unfolds on a farm (everyday acts of feeding, cleaning, milking and so on). On the other hand, I also think that there is a 'presentness' of the unaddressed - the gestures, postures, and movement of cattle - that make up an important part of their animalian lives and that occur for no particular reason: twitch of ears, swish of the tail, nudging against a branch, licking a metal bar. Secondly, I think that this notion of performance extends phenomenological discussions of dwelling in the previous section by taking an animal in its environment, thus affirming understandings of place in terms of embodiment. Finally, I think acknowledging how cattle mark their own performances - through their embodied engagement with the world - may enable humans to foster a 'care for (cattle) life'. I want, therefore, to utilize the legend that Thrift provides - the readiness, witnessing and intercession (see Thrift 2004b:97) - to adopt an 'awkward perspective' (Thrift 2004d:132-133) which admits other points of

[15] For examples of how the ideas being presented here – that the animal is something that cannot be fitted in to a performance, and that as humans we will never be able to completely get our heads round their appearance in the narrative of the performance – in social scientific and humanities disciplines see Game (2001), Glendinning (1998) and Smith (2003).

emergence that come from regarding cattle as individual animals: the 'brush' – how to clean the parlour, the 'touch' - how to look after a sick cow.

These three sets of examples have been concerned in one way or another with the notion of performance, but what has emerged here are divergent elements: from the scripted, planned and rehearsed animal bodies on display; to the processural affects and becomings that human and animal bodies may be capable of in any given encounter; to an 'imperative of alterity' (Read 2000:63) where animals can be viewed as mutually important beings and performers in the world. However, as geographers begin to contemplate the application of performativity and bodily practices, particularly through the theory of practice that Thrift has crafted in NRT, a series of concerns and limitations have been identified that I now want to outline and respond to.

Firstly, one needs to be mindful of the ways in which an emphasis on performance can recentre the figure of the human. In other words:

> The danger here is that a reasoning, abstract Cartesian subject can disappear only to be replaced by an equally abstract desiring, experimental individual (human) ethical agent (Hinchliffe 2000b:222).

In the first instance, the whale ballet is a staged event, the emphasis is fixed and located on human practitioners whom train, rehearse and choreography the animal bodies performing. In the second instance what in-betweeness and the process of becoming means for the herd of bison, and especially individual animals, is not pursued in any depth. In both of these instances are we making animals performers on human terms? Are we focusing on what may still become of the human as part of an attempt to disclose animal performances? What then might a 'no-purpose' (after Read 2004:12) approach to performance offer attempts to practice, think and write performance beyond the human? Can it enable one to theorize the alterity of animals?

Secondly, and following on, a view that non-representational understandings enact a series of dichotomies: academic/non-academic, linguistic/non-linguistic, knowable/unknowable. Here Nash (2000:662) queries whether articulating a non-representational realm becomes merely a task of writing about its unchartability thus "separating academics who think (especially about not thinking or the non-cognitive) and those 'ordinary people' who just act". I would add that I am not intending to overlook the linguistic but do accept that as academics it can perhaps seem that an assumption is being made that people are somehow unable to talk us through what they are doing, because it's so mundane, routine and everyday. I therefore want to make it clear that I do not think this is the case, for I believe that a farmer, for example, can describe his or her daily routines. Nevertheless, debates persist over whether academics are abandoning the 'knowable for the unknowable' and indeed the

role of representation in academic life (for commentaries see Castree 2004; Castree and MacMillan 2004:470; Dewsbury et al, 2002:438; Nash 2000).

Thirdly, and finally, the task remains then of how to animate the animalness of animals without seeking to appropriate animals on human terms. For me, this is to contemplate how a performative agenda might be drawn upon to let the animalness of the performance linger[16]. For I believe that geographers still have much to say and do on animals beyond them ending up as a product on a supermarket shelf or a choreographed display in a large swimming pool. Furthermore, I would add that much work emerging on performance tends to focus on the exterior porosity of human and animal bodies. Above all, this leads me to wonder about the interior of animal bodies - what of the 'emotions', 'feelings' and 'sensations' of the animals themselves (after Philo 2005)?

2.6 Conclusion: other ways of being-with[17] animals

> In everyday life, certain entities are disclosed not as mere environmental bodies, but as *others*. Not just in the world but *there too* and *there with oneself* (Glendinning 1998:1, emphasis in original).

Ecological and social scientists are beginning to engage more seriously and in a more sustained manner with theorizing human-animal relations. In contrast to the previous chapter that focused on what humans 'think' and 'know' about animals, much of the literature in this chapter has sought to identify 'who' we (humans) are and what we might become: what happens if 'we' can no longer safely be assumed to be human?

All the theorists in this chapter have acknowledged the complexity of such a question in seeking to find ways forward that complicate distinctions between the human and non-human, social and natural, subject and object, whilst maintaining a non-anthropocentric commitment. But oftentimes these works almost recover what they aim to collapse, that is, a definition and set of meanings for humanity. Although ecologists emphasize individual organisms and may take an animal in its environment as a focal point in research; aspects that I wholeheartedly embrace and reconfigure in a rather different way in the dwelling section (part 2.4); what remains is a segregated and divided ontology - a 'systems science' that positions individual animals within a hierarchical organization of life. The relational ontologies pursued by Latour (1993), Haraway (2003a) and Whatmore (2002) also appear constraining in remaining concerned first and foremost with collectives, networks and

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[16] This desire to 'document' performance – the lingering – is motivated by an awareness of the inevitable disappearance of live performance. I set out this relationship between 'disappearance' and the 'processes of collecting, preserving, and presenting traces of performance' in chapter 3 (part 3.31; see also Reason 2003).
[17] The use of the term 'being-with' derives from Glendinning (1998:57).

naturecultures rather than animals per se, often failing to be attentive to the ways in which animals challenge and fold these collective assemblages.

Although in no way wishing to ignore the innovation and excitement that these literatures bring in thinking through relations, ethics, politics and ontologies, I do find myself asking 'could these works have gone further in considering and admitting the agency, lives and living spaces of the animals themselves?' And I find myself replying 'yes'. For in all of these works animals somehow become dissolved - ecosystem, hybrid, kinship - and pushed through an analytical vocabulary - organism, actant, and hybrid. Within such frameworks very few traces of living fleshy animals remain - Duchess and Gay in the zoo enclosure or a herd of cattle in the Serengeti National Park fade away as they become theorized as part of a database or park management plan.

With this in mind, what does it take to gesture towards animals? How might one glimpse the lives of individual cattle as living fleshy beings? My intention in posing these questions is to stress that rather than making agency more attainable by animals - granting them agency on human terms (see Laurier and Philo 1999) - I want to explore what and how other animalian agencies might be theorized. In this way, the theoretical enterprise that I want to pursue in the remainder of this thesis aims to move beyond the located mark of the human to grasp something of the difference of individual cattle and to imploringly let that difference be. In the latter part of this chapter I signalled some of the starting points, drawing on literatures to hint at understandings of corporeality, place and ethics (parts 2.4 and 2.5). In this way I am concerned with pursuing a phenomenological path that is attentive to animalian ways of being-in-the-world (dwelling), to theorize what I have referred to as the 'interior' of animal bodies (performance), and finally, to contemplate what all this might mean in an ethical context. Let us be clear that my attempts in so doing are fraught with difficulties, not least I leave myself open to the charge that I too may end up over dependent on the figure of humanity, replacing 'old orders' for new (after Wolfe 2003a). So, in the next chapter I tackle these difficulties by describing my own attempts to take individual animals as the focus of my (academic) work, documenting empirical moments and theoretical literatures that aspire to discover and embrace animalian (cattle) difference.

3. Researching with animals: practicing, inhabiting, animating.

> ... how must the work change when the other to which it tries to do justice is no longer human? (Wolfe 2003a:7).

> ... us humans will be around as well, facilitating where appropriate, maybe watching (if we are interested and concerned), but always effacing ourselves and not doing harm. We should look to extend human 'courtesies' to animals, almost a sense of allowing them the decencies of life, space and place that we (humans) would expect and want for ourselves and others, in a manner that maybe does stem from a certain anthropomorphism (reflecting the possibility that in certain respects animals are *not* so different from humans) but which also objects to a crass anthropocentrism (one that only thinks about the world in terms of what we humans see, want and take to be important). It is to imagine a new animal geography on the sharp end of such issues, not 'ducking' (Philo and Wilbert 2000:25, emphasis in original).

> ... what remains is a nagging refusal to settle for inaction, an insidious unease about the potential hypocrisy of talking the talk but not walking the walk, a growing kernel of belief that caring at a distance can be mutually enriched by formal implication in other lives and other spaces (Cloke 2004:99).

3.0 Introduction

The two previous chapters have sought to describe how humans construct cattle in ways that may neglect their animalian ways of living and being in the world, the crucial shift that this chapter makes is to outline some of the ways in which this impasse might be redressed methodologically. In essence, I am concerned with how animals might become the focus of (academic) work: to make a shift from viewing agency as performed collectively among entities (chapter 2) to pondering the specific agencies that cattle bring; and from placing cattle into broader categories – landscape, farming, food, policy (chapter 1) - to seeing cattle as individual animals. Academically, then, the task here is the investigation of empirical styles and practices *with* and *for* animals rather than merely *on* them (after Chen and Trinh 1994). And this is no light matter, for it requires us to accept research as an ongoing and shared process among all those participating in the project, regardless of whether they are human, non-human or inhuman, and in whatever capacity.

With these thoughts in mind, this chapter is divided into three parts. In the first part, *'practicing'*, I outline some of the methods that animal scientists and social scientists have called upon in researching human-animal relations. In particular, I highlight how these approaches enact and reinforce a series of juxtapositions: 'real' animals/representations of animals, detached reasoning/empathetic understanding, observable behaviour/inner life; that result in an emphasis being placed on human relations to and on animals in ways that make apprehending animals

themselves difficult. In the second section, '*inhabiting*', I respond to the inadequacy of this position and attempt to show how animals can become the focus of research. Here I draw upon my relations with one cow in particular, Margaret, and her pivotal role in guiding my work, her influence (along with that of other cattle who have participated in this project) in selecting places and things to research. In the third and final section, '*animating*', I begin to think through how I might 'write otherwise' (after Bingham 2003), of how the individual animals that have become part of the research process can resonate through this written document. In this way, I explore the displacements between 'capturing in the field' and '(re)presenting in text', and confront my deepest fears and anxieties that cattle will disappear and be written out of this thesis.

3.1 Practicing

In this section of the chapter I explore the methodological techniques drawn upon by animal scientists and social scientists in researching human-animal relations. I comment upon research that I conducted while studying for my Masters degree that, looking back, now heightens my unease that there remains a tacit, underlying emphasis on human relations and appropriations of animals, something that I make an effort to avoid in the course of doing this research. Though I do outline work that aims to view animals as individual subjects I argue that much of this literature does not pay sufficient attention to coming face-to-face with, touching and encountering animals and thus does not consider what relations mean for and to the animals themselves.

3.11 Prompting thoughts: Mr and Mrs Big

Figure 3.1: Mrs Big eating and Mr Big climbing over her attempting to get the piece of carrot.
(Photograph taken Tuesday 14 August 2001)

There was a tap on my shoulder earlier today, Jenny [Head of Research at the zoo] told me that she'd been hearing some of the interesting things that I've been observing over the past few weeks and asked if I'd mind doing a study on Mr and Mrs Big for the zoo.

...

I seem to spend hours watching the kinds of things they do in this space....from Mrs Big resting in the tree pot to Mr Big stretching out across the sand...sometimes Mrs Big will go up to Mr Big and chase him then stop suddenly, digging in her claws and licking the scales on his back...she did this today and Mr Big - I've never noticed him do anything like this before - followed behind as she went up to the large stones at the front of the enclosure and then he sat on her head.

...

Jenny dropped off the form after the zoo had closed - a table with time intervals which means every one minute I have to record where Mr and Mrs Big are and what they are doing by ticking an appropriate box. This may sound simple enough, and in many ways reminds me of a school project, but from being with Mr and Mrs Big, especially when its just the three of us in the enclosure, the ticking of boxes doesn't seem to compare to the moments we have shared; watching water seep in, the beetle incident, searching for red pepper, digging tunnels, replenishing sand, carrying bark.

Fieldwork diary entry, Friday 3 August 2001.

The diary entry and the photograph above are the result of research that I conducted while studying for a master's degree in 2000-2001. I was researching human-reptile relations at a zoo, concerned on the one hand with how humans (architects, zookeepers, veterinarians) designed an enclosure for two reptiles, rhinoceros iguanas known as Mr and Mrs Big, while on the other hand, being interested in developing micro-geographies[18] of how Mr and Mrs Big used the enclosure provided for them, interacted with one another and others around them. I spent several weeks at the zoo over the course of one summer, shadowing the zookeepers, going into the enclosure - sometimes alone - to spend time with Mr and Mrs Big, and watching them from the public gallery - following how visitors attempted to interact with them and how the animals responded. I often remarked to the zookeepers on little things that I'd noticed Mr and Mrs Big do: basking under the sun lamp at the front of the enclosure early in the morning before visitors arrived, Mrs Big hiding carrot and red pepper from Mr Big by placing it in a tree pot, and Mrs Big digging a trench. These observations led the Head of Research at the zoo to ask me if I would be willing to do an animal behaviour study. Alongside taking extensive field notes and making time-space mappings of where and what Mr and Mrs Big did all day, I now had a tick-box animal behaviour sheet to complete, divided up into 'locomotion', 'still', 'feeding' and 'location' sections (a copy of this form can be found in appendix I). I have highlighted this previous research and cited this request because I continue to grapple with two interconnected issues that this fieldwork raised. The first issue is how to reconcile my own research training as a geographer and resultant concern with mapping the intimacy of human-animal encounters with the scientific and arguably quantifiable form that I was given by the zoo official. The second issue, and something that continues to disturb me, is how little social scientific literature is available on practicing research with animals. So it was my experience as a master's student that not only fostered my interest in animals but also left me with nagging doubts about how to research with animals.

3.12 Animal sciences: 'cow costumes'[19] and becoming an animal

The methodological enterprise at work in animal sciences is concerned with what can be directly observed and subject to experimental verification. This excludes thoughts, feelings, concepts, desires and intentions in animals as they cannot be explored experimentally by the human researcher and so are not seen as legitimate objects of study (Rollin 2003a). Consequently, scientific methods tend to observe animals as the same, distinguish animals that are clever enough to master and perform tasks (Stamp Dawkins 2003), and focus on why animals behave the way they do rather than how they feel

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[18] The phrase 'micro-geographies' is used to signal the emphasis that I have placed on researching with individual animals at a micro scale. In the chapters that follow I aim to present empirical moments that describe the everyday spaces where cattle are living out their lives, to provide a sense of the intimacy of being-with an animal (see also Lorimer 2004; Wolch 2002a).

[19] My use of the term 'cow costumes' emanates from Grandin (2003b:184).

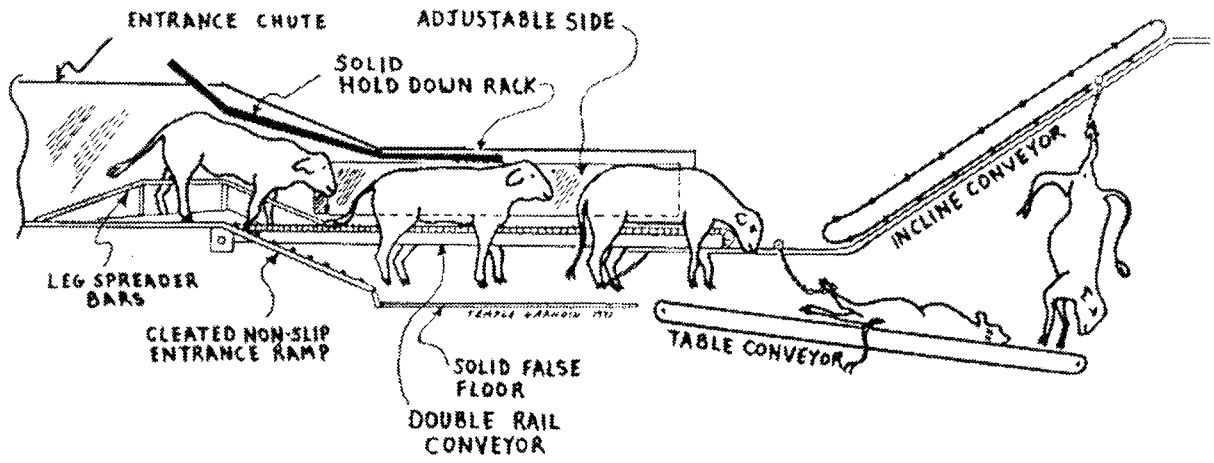
about it so as to isolate aspects of behaviour for quantification. What is missing, however, is an understanding of an individual animal's uniqueness and difference. A number of animal scientists are beginning to displace the historical lineage of reductionist methods that pervade veterinary medicine.

Temple Grandin (2003a 2003b), for example, describes how her life as a person with autism has enabled her to understand animal experiences:

> Using my visual thinking skills it is easy for me to imagine myself in an animal's body and see things from their perspective. It is the ultimate virtual reality system. I can imagine looking through their eyes or walking with four legs (Grandin 2003b:184).

As part of an attempt to become an animal, rather than "just being a person in a cow costume", Grandin (2003b:184) has spent much of her career devising methods for monitoring the welfare of cattle at abattoirs in the United States. On the one hand, this has led Grandin (2003a) to design a system to move and restrain animals through the slaughterhouse (figure 3.2).

Figure 3.2: Conveyer restrainer system



Grandin (2003a:220)

On the other hand, Grandin (2003a) monitors the welfare of cattle waiting to be killed in the chute using an objective scoring system wherein mooing is measured by slaughterhouse employees on a yes or no basis. However, the data that is recorded does not extend beyond the quantifiable and codible – what is an animal's experience of being restrained in the chute, walking on a false floor, their vision blocked? What of the feel and expression of the way in which an animal moos?

In contrast to Grandin, Françoise Wemelsfelder (2003) has sought to develop qualitative methodologies that make visible how an animal experiences the life conditions that humans have created for it (see Wemelsfelder et al, 2000). Wemelsfelder (2003:200) illustrates this modification of empiricism (why an animal does what it does) with the example of going into a pen containing a single pig. Here, she draws attention to how the expression of suffering can take the form of withdrawal:

> of absence rather than presence and it can appear in an expression so subtle that we could fail to notice it, or ignore its significance... it speaks to a loss of communication, of a lost ability to cope. I found that quiet emptiness emanating from the pig poignant and sad.

In other words, this is about inventing concepts which have the power to deal with these perturbing expressions. Attending to this, Wemelsfelder (2003) (see also Wemelsfelder and Lawrence 2001) excavates a 'whole animal approach' that enables human observers to choose the descriptive terms that they believe best depicts the behaviour that a given animal (i.e., an individual pig in a pen) is exhibiting. These descriptions are then analyzed using a multivariate statistical technique to finds a 'best fit' for all observations and draw up a consensus profile (see Wemelsfelder et al, 2000).

Taken as a collective, these examples point towards the relationship between accessing the subjective expressions and behaviours of animals by observing them, and how what is recorded is brought to bear on scientific frameworks and modes of thought. In this way, questions of how to generate, and what constitutes, acceptable data emerge. Firstly, regarding data collection, Webster (1995) describes the haste with which animal scientists have to work to be able to provide quick answers to practical questions posed by farming organizations and government departments. One of the consequences of this, Grandin (2003a) notes in her work, is that abattoir companies prefer to adopt behaviourally-based facility designs (figure 3.2), rather than training their staff how to handle animals. Secondly, regarding data presentation, analysis and dissemination; these examples draw attention to the complexities of how to describe animal lives and experiences without resorting to what may be perceived as anthropomorphic tendencies (see Bermond 2003; Kennedy 1992; Rollin 2003a 2003b). The incorporation of this scepticism leads Morton and Griffith (1985) to distinguish between the 'commonsense of science' and 'ordinary commonsense' in querying the role of farmers and other humans whose lives are spent in the company of animals and whose livelihoods depend on animals in providing insights into animal mentation. What begins to emerge here, then, are a series of dichotomies: scientific (expert)/non-scientific (lay), individual animals/collectives (herds, species), supposedly 'good' or beneficial forms of anthropomorphism/'bad' and damaging forms (see Desire et al, 2002). In contrast to functional and mechanistic approaches of animal sciences, which upon finding a characteristic or trait in humans seek to discover if it is present in the biological functioning of animals (Stamp Dawkins 2003), the examples here acknowledge how

humans need to be conscious of their limited perspectives and imaginations in seeking to understand the lives of other animals. However, what is often lacking in these accounts, perhaps as a result of the scientific frameworks into which these researchers are drawn, are intimate details about coming face to face with, touching and engaging with another animal.

3.13 Sociocultural research: animal representations, human thinking

Social scientists continue to contribute to public and academic discussions on how human societies come to regard animals and the role that animals play in human lives (Crist 1999; Franklin 1999; Sabloff 2001), the methodological enterprise at work here rooted in ethnography and moving towards experience ground out of the body (see Finnegan 2002). Thus, tackling the anthropocentric ideology that animals lack the supposedly unique human attributes associated with the linguistic faculty, researchers have begun to derive data from personal experiences with animals, recognizing animals themselves as self-aware and communicative (Arluke and Sanders 1996). In this regard, Shapiro (1989 1990) outlines a mixed methodology, or what he terms 'kinaesthetic empathy'. That is, a way of apprehending relations drawn from knowledge of an animal's history, its social construction by humans, and understanding of its bodily registers – postures, movement and use of space. This stance, that the lives of animals are not impenetrable, has been taken up by Alger and Alger (1999) whom examine interactions between humans and felines in a cat shelter, describing where and with whom animals sleep, eat and play. Following on, Arluke and Sanders (1996) adopt the ethnographic practices of a group of researchers from the University of Chicago in the 1920s and 1930s to explore how people working in laboratories and shelters construct boundaries between themselves and animals (for further examples see Cunningham 1995; Sanders and Hirschman 1996).

I am left wondering, however, if these methodological perspectives are a little pretentious and off the mark. For what if the empirical data were collected and interpreted from the point of view of animals? I am thinking here of laboratory practices (breeding, experimentation) that go beyond describing how a scientist or technician conducts a clinical trial and handles animals. Or, how issues relating to neutering and euthanasia affect where and with whom individual animals live in the shelter and how they are rehomed. Above all, this is to understand the degree to which social scientific work is caught up in the meanings that animals have for humans, how humans organize the social world and see their connections to other living things and thus how people can learn more about themselves as social creatures. In this way, the enterprise at work through the empirical encounter is about 'reading societal meanings into the animal kingdom' (Mullin 1999:227) rather than regarding animals as interesting in themselves, as creative and active beings playing roles in everyday human lives. The question remains, then, how to act upon this view that animals ought to

be regarded as active subjects in the study. In the next section I want to indicate how my style of research plugs into a more creative methodological space, oftentimes evolving in unanticipated and unexpected directions.

3.2 Inhabiting

What theoretical, empirical and practice spaces have I opened up in the course of doing my research for cattle to participate (or not), to become entangled in the fabric of this thesis? How can I carry forward this commitment to continue the journey[20] that I had begun with Mr and Mrs Big (part 3.11), namely that the focal point of research should be with the animals themselves?

At this stage I would like to make two preliminary remarks about the challenge of doing research with animals. The first is that I acknowledge that there are certain things that I, as a human, am not able to do, for example: interview cattle, experience rumination or be milked twice a day! Taking empiricism forward into this project, though, my concern is with identifying contexts and moments where cattle contest and assert themselves in their relational entanglements with humans. In this regard, then, I do not see these obvious difficulties - of not being part of bovine taurine - as a hindrance to this research, nor as a reason to focus on human participants. Dwelling on these things, I believe, edges one towards an epistemological fallacy. The call here is not to measure or treat cattle the same as humans or to attempt to understand animal life from within (umwelt) (see Irigaray 2004); but to recognize differences between humans and animals so as to find ways of sketching out the kinds of 'working together' that Whatmore (2004) calls for. In this way, I want to 'encounter' and 'be-with' animals face to face, to open up to other ways of living, being and becoming through residing in spaces and places with cattle and in so doing it is precisely these differences between researcher (me) and researched (humans, animals) that become interesting. How do I conceptualize and negotiate my engagements with those with whom I have researched (after Massey 2003)? My second point follows from my aim to engage cattle more on their own terms. On the one hand, social scientific literatures on research methods for studying human-animal relations are sparse and disparate. On the other hand, I am not suggesting that I have, or will need, to call upon an entirely new set of methods (although there may indeed be some out there), instead I agree with Latham (2003:2000) who argues:

---

[20] My use of the terms 'journey' and 'journeying' derive from Whatmore and Thorne's (1998 2000) attempts to travel with elephants, crocodiles and leopards through wildlife networks, illustrating the shifting positionalities of animals caught up in these scientific, conservation and leisure exchanges. Although this task is nevertheless vital, I wish to use these terms more expansively through the thesis so as to consider in a more sustained manner what it is like to be in the company of an animal as a living fleshy being and, in the context of this chapter, to admit the agencies of the animals themselves in transforming my research practices.

> rather than ditching the methodological skills that human geography has so painfully accumulated, we should work through how we can imbue traditional research methodologies with a sense of the creative, the practical, and being with practice-ness.

With these thoughts in mind, the remainder of this section is organized into four parts. The first part draws on empirical moments from my fieldwork, my encounter with a cow called Margaret and literatures on otherness, to attend to how it is possible to take animals as the focus of research from the outset - how can I 'go along' with Margaret while remaining other to her? The second part develops this theme of how research can be animal led in describing how Margaret (and other cattle) shaped the course of my project, determining the objects, bits and pieces that I researched and the places I visited. Thirdly, I outline the mixed qualitative methodology that I have drawn upon in being-with animals 'in the field'. The fourth and final part reflects upon some of the issues that I encountered in the course of conducting this research. In particular, there is a sense in which the participative methodological approach that I am calling for, the individual micro-geographies of cattle that I am seeking to animate, may backfire and result in the (re)imposition of human-animal asymmetry. In this way I move towards the third and final section of the chapter which explores different ways of embracing the open-endedness of the to-ing and fro-ing implicit in the research that I have conducted (after Whatmore 2002).

3.21 Margaret

Figure 3.3: Margaret

(Photograph taken Wednesday 29 May 2002)

Beginnings…an agricultural show

Meeting Margaret

It's very quiet and calm and somehow the smells of animals penetrate the brick, timber and steel of the building - sweat and body odours mix with morning air. There are boxes, buckets, bins, chairs and wicker containers everywhere. Apart from one man walking through the shed with a bucket whistling there's no one else with us, it's just me and the cows. They are lying down and there's only the occasional moo and small rustling sounds from movement. All except for one cow, whom I discover from Martin (a dairy farmer), is called Margaret. Margaret is stood up, tongue out…she notices me, stares for a few seconds before placing her head over one of the partitions which is partially covered by a brown blanket and delves into a blue bucket containing feed.

…

Shed

Margaret's body is rolling, she's twisting her head and giving out a loud prolonged mooing sound. Martin runs over, placing his arm across her back - "you're not going to spin over"…two men in white coats with sticks look on…Martin unties the rope connecting the chain to Margaret's neck, Margaret gets up and they walk to the door of the shed, Martin ties Margaret to one of the barriers across the entrance…the men in white coats sweep away the straw…Margaret looks on (turning her head and chest) as Martin collects more palls of straw and takes them over to the resting area. He unbinds the straw, using his hands to unsettle it and then a rake to lay it over the concrete ground…the straw has now reached the same height as the three other cows that Martin has brought to the show, and yet he continues, and a huge heap emerges…Martin stops, unties Margaret and takes her back. As she lies down, front first, she disappears among the straw which collapses onto other parts of the concrete flooring previously uncovered. I can only see specks of black and white on parts of her back and the tip of her head when she looks up.

…

There are lots of people in the shed looking at the animals, the two men in white coats are continuously sweeping up loose straw and topping up the sawdust … a little girl runs up to Margaret, I noticed her earlier stroking a calf, she stands there and all of a sudden Margaret lifts her tail and pees.

…

Show ring

Martin's spent all morning preparing Margaret for the class, she won first prize two years ago and there's competitive banter among some of the farmers. Shortly before the class starts, at 10.30, Martin does what he refers to as "finishing touches". It's a warm day and we are outside the shed, he hoses down Margaret's legs and feet, frantically brushes her tail, adds talc powder and bits of glitter to her white fur, all the time Margaret just stands there like a statue. Martin puts a clean white rope around her face and leaves her with another farmer while he goes off to get changed. Martin re-appears 5-10 minutes later wearing white overalls, and then we wait.

…

Martin leads Margaret into the ring and they walk round three times, then the judge stops each cow…Margaret is facing the shed, her front two legs parallel but her back left leg is much further back than her right…the judge walks round and then moves on…after seeing each cow they do one more circuit of the ring and then the cows are lined up…Margaret has not won a prize this year…on leaving the ring Margaret increases her pace and momentarily Martin struggles to control her, grasping the rope and pressing his hand against her face, Margaret bangs into the metal barricades that separate her from visitors and ends up head butting Martin, snot dripping from her right nostril.

Fieldwork notes, Wednesday 29 May 2002.

Meeting Margaret, and spending three days with cattle at this agricultural event, led me to alter the archaeology of my project. Specifically, I came to realise that my original ESRC proposal (a copy of this form is located in appendix II) was very much wrapped up in the functional and productionist discourses outlined in chapter 1 (parts 1.11 and 1.2), that I was understanding cattle as a collective, a generic category - the emphasis was on a range of 'places' (the farm, market, slaughterhouse) and following a rigid schedule of one week per location rather than 'cows'. I became conscious that crucial elements were missing or had been overlooked in the proposal and that I too was open to the charge levelled at animal scientists, namely of treating all cattle the same. Spending time in the shed with cattle I began to notice little things that the animals did, the ways in which they relate to others around them - mooing, staring, moving (tails, ears, feet, chest), I became aware of them as individual animals - living fleshy beings. Moreover, I now wanted to reorientate my project so as cattle might participate more actively in the research process, to shift the emphasis then towards animals rather than places. With this in mind, how was I to research the lives and living spaces of individual cattle?

An initial starting point may have been to follow other geographers in treating animals as a marginal social group (see Philo 1995), addressing how Margaret had been 'othered' by human discourses. In this way, I could have traced how the biological materiality of Margaret's body unfolded in the show; her breeding, genetic make-up and concepts of bloodline and stock. Or, perhaps I could have followed her entry into one of the dairy classes with the resultant practices of presentation and showing, and how this staging relates to ideas surrounding health and cleanliness, food production and consumption. In pursuing this line of enquiry one pays credence to, perhaps extending, work in cultural animal geography that seeks to explicate the roles that animals play in human identity construction and how these relate to notions of place, gender, race and ethnicity (for examples see Anderson 1995; Elder et al, 1998 2002; Philo 1995). For me, however, this way of thinking causes problems (which is no bad thing) but here are two that should be of concern. Firstly, and at a theoretical level, I am left wondering if these works share with social scientific research more generally a concern with how humans have come to categorize animals as 'other' rather than animals per se. Crucially, I believe that the very otherness of the animals themselves becomes appropriated and erased. The second problem is methodological and centres on how animal experiences, sufferings and possible acts of transgression are explored through conducting fieldwork with, and by reading the documents of, humans. Amid calls by Wolch (2002a 2002b) to consider animal ideas about humans (see also Gullo et al, 1998) much of this work remains unexplicated. Theoretically and methodologically, therefore, I would argue that existing literatures neglect how "we can risk ourselves for others by implicating ourselves in their lives and their spaces, extending ourselves to cover the place of the other" (Cloke 2004:96-97).

Picking up these two concerns, how did I reorientate my research towards cattle? How was I able to relate to and experience the animalian otherness of Margaret beyond the humanely conferred exhibitive space of the agricultural show? The first way in which I encountered Margaret was through the body. In the context of health geographies, Parr (1998:31) indicates the neglect of the physical presence of the body in methodological writings:

> sensitivity to organizational difference in individual geographies, and subsequent modes of embodied social interaction, to be informative and enlightening in ethnographic research... interactions in certain places both made by and make the body.

Motivated by a reinvigorated interest in the body, recent work in health geographies has sought to explore the significance of corporeal channels in communicating illness (Dorn and Laws 1994; Parr 1998 2002a) and the social context in which medicine is practiced (see Davidson 2003; Radley 1999 2002; Radley and Chamberlain 2001). In particular, these ideas offer a way of apprehending Margaret beyond human discourses. For example, how does Margaret communicate through movement, sounds and bodily secretions? I am referring here to the ways in which Margaret's urine, faeces, saliva and moo breached the corporeal boundaries constructed by the show organizers. The second way in which I implicated myself in Margaret's life was by extending myself to cover her animalian experiences and uses of this place. I presented my body in particular ways (Parr 1998) - touching and talking with her, and sought to move beyond the scripting of the show with its opening hours and timetabling of events, to be with Margaret in the shed at other times - when closed during judging classes and before the show opened each day; sitting with her, collecting more straw and changing her water bowl. This led me to question what Margaret's experiences of the agricultural show might be - the shouting children, feelings at being poked and prodded, the sweeping and hosing of concrete, the heat and stickiness of being inside, her separation from other members of the herd; the sensations of talc powder and glitter, wandering in circles, standing in line, being pointed at, followed, judged. From this brief discussion of how I came to see Margaret's otherness I now want to move beyond our initial meeting to describe how I travelled back to the dairy farm in Somerset on which she resides and how, beyond the staging of the show, Margaret and other cattle have shaped the contours of my research.

3.22 Journeying with Margaret: sites, spaces, things

Figure 3.4: Rethinking fieldwork: animal interventions in research[21]

How did individual animals become responsible for making me go in specific directions, follow particular objects and map times and spaces? The journeying depicted above (figure 3.4) is part of an attempt to sketch out how animal 'happenings' at the show and on a dairy farm led me to follow 'things' and map topologies in ways very different from what I had anticipated doing in my original proposal (appendix II). In this section I want to take each of the images or trajectories being traced through this diagram so as to show how the everyday lives of cattle reverberate through the fieldwork that I have undertaken. The bulk of my farm visits were conducted during the period June 2002-February 2003. The images collated on figure 3.4 were excavated during the period February 2003-September 2003. But this is not to suggest that my fieldwork can be neatly split into two distinct phases, nor that each of the images on the diagram above is self-encompassing, for they all cross-cut one another. For my purposes here, however, in what follows I want to explore these pictures so as to provide an overview of the fieldwork that cattle and I have completed. For what

[21] Please note: this diagram was created with assistance from Drew Ellis and Jonathan Tooby, cartographic officers, School of Geographical Sciences, University of Bristol.

these images draw attention to are their beginnings in very mundane, everyday practices; practices so ordinary that they go unnoticed - an animal eating, feeling unwell or lying down[22].

Policy

"If anything had happened to my cows or sheep I'd have just wanted to die myself, it's not worth thinking about…I was thinking about it at least once an hour every day and then went to bed thinking about it, it drove me silly, I just hoped and prayed that it wouldn't happen to us…it passed us by but I know people who were affected, it was horrendous".

Conversation with Martin, dairy farmer at Folly Farm,
Wednesday 29 May 2002.

I leave the field and am walking back to the car, a lady approaches me, she lives in a house near Martin's farm

…

"Martin's told me about your project, I'm really pleased he said yes…I don't think he takes very good care of his animals"

…

During the conversation I discover that the neighbour doesn't think that Martin is very kind to his animals because she notices how the cows are left in the field when it rains and get covered in mud

Fieldwork diary entry, Friday 28 June 2002.

In my original ESRC postgraduate studentship application form, under 'aims and objectives', I had written:

> I will focus my analysis on cows…Cows have, until very recently, been neglected because they were deemed abundant. However, the BSE crisis and the more recent Foot and Mouth outbreak have placed cows at the centre of these crises, arguably as "innocent victims".

After my application for funding was approved I thought little about the significance of these crises. It was not until I met Martin at the agricultural event and had informal conversations with him that I began to realize the impact of FMD on his livelihood - his attachment to the herd and frustrations towards government officials whom he believed had underestimated the spread of the disease. I decided to contact a government department charged with addressing the problems that had beleaguered efforts to take charge of the outbreak. I was put in touch with two civil servants

[22] Please note, more specific information on the companies and organizations that have participated in my research is contained in appendix III.

managing a public consultation exercise on animal disease. I made a total of six trips to London over a one year period (2003) so as to trace this project from conception to consultation.

The second aspect of policy, 'farm animal welfare', also derives from my original proposal (appendix II) but was (re)stimulated by the concerns of Martin's neighbour documented above and from spending time on the farm noticing the ways in which Martin 'takes care of his animals' through routine and daily tasks: feeding, cleaning, touching, talking. Moreover, I became interested in exploring understandings of 'welfare' and where these understandings – 'the mud' - emanate from. In total, three animal welfare groups, three animal rights groups, two university veterinary departments and three unaffiliated animal rights protesters participated in my research. I followed a range of campaigns organized by welfare and rights groups: from cow-calf separation to production diseases (mastitis, lameness, pharmaceuticals and genetic engineering), and from transport (markets, slaughterhouse) to consumer products (leather, cosmetics, vegetarianism). In total fourteen interviews were conducted with people involved in researching, planning and disseminating campaigns. In addition, I spent a morning street collecting for an animal rights group, carried out a survey of dairy and meat free products on supermarket shelves with a welfare charity, spent a day at an animal sanctuary, and a day in a barn with a group of chickens and three animal rights activists. What emerged from these interviews, and from spending time with campaigners as they interacted with animals and the public, was the importance of situating campaigns within animal science. I therefore spent a day with a group of animal welfare researchers at a university veterinary department and have ongoing discussions with academics researching animal behaviour.

Violet

Its 6.00am Martin, the cows and I are stood outside the parlour. We've been waiting for thirty minutes now…Cow 140 (Violet) is blocking the entrance and wont budge. Martin has tried talking "come on girl", stroking, tapping her with a stick, and is now suggesting singing might help. The other cows are responding to Martin's frustrations too - Melissa and Margaret nudging her but she's just standing there.
Forty-five minutes later she moves.
…
Violet enters the parlour, tail swishing slowly from side to side, walking on smooth flooring, that is already beginning to get damp and muddy as the other cows follow her …Violet turns right onto a grid-like surface, a short step up and she's in her cubicle.
"Here…come on" Violet moves further forward and Martin places a thin, flimsy chain across her upper back legs.
He attaches plastic tubing to a black unit with a mini orange pumping gauge…the metal cups to Violet's udder.
…
The shed is quiet except for the background hum as the milk is extracted - a juddering and thrustful rhythm.
…
Hosing down, clearing the mud, the smooth flooring re-appearing.

Fieldwork notes, Monday 8 July 2002.

This moment raised three sets of issues. Firstly, I began to question why Violet did not want to enter the parlour. Secondly, I became interested in following where some of the equipment being used in Martin's parlour came from. I contacted the company that supplies his farm and was able to interview a research and development manager, marketing manager and a member of the engineering team. Moreover, I was granted access to the company's manufacturing facilities, spending a morning with Kevin (a product assembler) watching him tool a machine to make milk sampler cups and an afternoon in the warehouse working with three members of staff testing jetstreams and preparing milk sampler cups for distribution. Additionally, this contact also provided me with an opportunity to interview a specialist whom manufactures wallcoatings for dairy farms. Thirdly, this moment led me to think through how this situation might be avoided altogether. In this endeavour two companies manufacturing robotic milking technology participated in my research. I was able to interview a marketing manager, product manager and spend a day on the factory floor watching these products being assembled. Drawing these conventional and robotic products together, I interviewed a hygiene inspector whom inspects milk producing facilities and, in a follow-

up appointment, was able to spend a day with him as he visited farms and completed hygiene assessment reports.

Animal Feed

Margaret

Margaret's head is buried in the trough…she lifts up - a long strand of straw attached to her nostril…She stretches out her tongue but the straw remains.

…

Her head plunges again, I walk up to the trough and peer over, she's chopping the fodder into smaller bits, the initial movement an almost yet not quite clasping motion at the tip of her mouth, chunks disappearing, her jaw moving from side to side.

I bend down to listen…the straw comes towards me.

The food is no longer visible and yet Margaret persists with this chewing and chomping motion.

Fieldwork notes, Friday 26 July 2002

For Margaret to produce consistently high milk yields she needs to eat the concentrate feed from the trough. In this moment I picked up some of the pellets - dry, smooth, leaving a chalky residue on my hands - and started to think through issues relating to palatability and edibility. I contacted the feed company that supplies Martin's animals with concentrate, and interviewed a feed scientist, cattle nutritionist, business manager and feed mill manager. I also spent a day at a feed mill, watching a container of seeds from Argentina being off-loaded at the docks - tracing their journey through the mill until they were tipped onto a lorry. I was also able to spend a day with a government inspector responsible for enforcing legislation on the manufacture and storage of feedstuffs. To pursue my interest in palatability, and concern with animals themselves further, I spent a day at a university veterinary department discussing how feed products are tested on dairy cattle and finding out how statistical analyses are used to develop international feed guidelines for beef and dairy cattle. Furthermore, an opportunity also arose to spend a day watching a mould for a feed trough being manufactured.

Pharmaceuticals

Melissa

"not been very well and I was quite concerned so I decided to give her a vitamin injection which has perked her up…a good idea"
Melissa moos.
"Come on, try that"
Sniff…moo…
Puts her head in the bucket.
Sniff…chew

Fieldwork diary entry, Saturday 3 August 2002.

Arriving at the farm to find that Melissa had been feeling unwell led me to query how Martin knows when his cattle are sick - a decline in milk yields, loss of appetite, bodily excretions, changes in their postures and interactions with him and the herd? Over the duration of my farm visits I observed animals receiving routine veterinary treatments (worming, vaccinations) and watched as Martin completed the animal medicines book. I began to contemplate where these medicinal products - the vitamin injection - originate from. How are these preparations and treatments researched, developed and licensed? How do they unfold into the life-world of cattle such as Melissa?

At the preliminary stages of my research I contacted several pharmaceutical companies manufacturing drugs that had been administered to Martin's herd. Five pharmaceutical companies participated in my project. I was able to tour the research laboratories of three of these companies, spending up to half a day visiting each facility and interviewing staff involved in overseeing product development, scientific research and quality assurance; as well as employees directly involved in the development of cattle products. In total seven interviews were conducted. As I toured laboratories and talked informally with staff a common set of themes began to emerge: companies perceived U.K legislation to be too stringent and complex, and there were additional concerns that alternative products (homeopathic treatments for example) were not subject to the same regulatory process. To pursue these themes further I decided to contact organizations that represent the pharmaceutical industry. I was able to interview representatives from four of these organizations who offered insights into the role of medicines in dairy farming, the impact of drugs on animal and human health, and regulatory mechanisms. In addition, I also contacted a number of companies developing and marketing homoeopathic treatments for cattle and interviewed two people at one such company.

A substantial period of time was taken to understand the ways in which cattle drugs are licensed in the U.K. I contacted the government department responsible for licensing veterinary medicines and was invited to attend a two day training programme designed to provide veterinarians from non-EU member states with an overview of the U.K regulatory process. Moreover, I conducted interviews with twelve government employees responsible for assessing applications from pharmaceutical companies and monitoring drugs once licensed. I also made further visits to this government office to look at copies of dossiers that had been submitted by pharmaceutical companies, and to follow how an online scheme set up to monitor adverse drug reactions was administered.

Breeding and Genetics

Joanna

"Starting there *(Martin points to Joanna - stretching out his right arm),* looking at her now um…she's got quite a reasonable hind quarter…but she does lack the um...width in the hind quarter where the most valuable meat is".
…
Walking towards her. Stop.
…
"She won't be an animal that will be grade 1 beef but it will still be very tasty".
Joanna walks towards us…"they're just like big pets really".
She pushes against my arm - she seems to like pressure being applied to the top of her head…I scratch the sides of her face with my fingers….she uses her tongue lots as I do this…her lips wide apart and tip of her tongue clearly visible.

Fieldwork notes, Thursday 14 November 2002.

How does Martin decide from looking at Joanna - the arm gestures - that she will not be grade 1 beef? Reflecting back, how does Martin decide which cows to enter into dairy events at the agricultural show? Indeed, when an animal is born on the farm how does Martin settle on - often within seconds - whether a calf will join the dairy herd, be raised as beef (Joanna) or sold at a cattle auction (Yasmine)? On the one hand I became interested in how Martin maintains his dairy and beef herds and this led me to contact two breeding companies that he uses, interviewing a fertility advisor and cattle manager about the process of artificial insemination and reproductive technologies. On the other hand, I traced Martin's 'herd genetic report', spending an afternoon with

a statistician trailing how information provided by milk recording organizations and breed societies is inserted into a database to produce genetic evaluations for cows and bulls in the U.K.

Animal Bedding

Teresa

Martin's using the tractor to lift a bale of straw from the huge pile in the out building.
Moves it to the shed…
Teresa hears the tractor, presses her nose against the bars.
Martin takes the bale off and carries it along the shed, Teresa's now following.
He lifts it over the fence, unravelling the plastic sheeting…getting a fork…picking up the bundle, shaking it…The straw heaps up against one wall.
Teresa comes over, bends down, sniffs… wanders back and forth and stops at one patch for three or four minutes - head bowed, sniffing intensely, moving over this area - stopping, bending, chewing.

Fieldwork notes, Monday 2 December 2002.

The replenishment of straw is important to Teresa and she has followed Martin as he distributes a bale on many occasions. She approaches him and waits for the unwrapping - the crackle and rustle. This moment also reverberates back to the agricultural show. When I met Martin he had taken four cows to the event and afterwards I began to reflect on how he made up the bedding for each animal differently - higher and mounted on the right for Margaret, more of a flattened shape for Melissa. This led me to query how Martin knows how individual animals like their bedding made, and to ponder how these different materials - straw, plastic - with their textures and smells are perceived by the animals. Teresa's reactions towards the 'unwrapping' led me to contact the company that supplies Martin's farm with stretch films. I was invited to spend an afternoon at a warehouse packaging and storing three types of film. Extending my interest in bedding materials further, on one occasion, as Martin was spreading straw in the shed, he mentioned that a company manufacturing cow mattresses and pillows had provided him with a quote. I too contacted the company and although these products are currently being imported from Canada, I was able to visit a distribution facility in the North of England and spend a day with a consultant whom measures sheds and provides quotations.

Debbie

…inside one of the sheds, standing against the metal gate.
…
Arm signals - Martin guiding the lorry into the yard.
Lowering the ramp…sprinkling straw.
…
"Go on"… *(Martin keeps making a strange whistling sound)...hitting her with a stick,*
Debbie moving and Martin and the lorry driver following closely behind.
"Get up". *She stops.* "Go on".
…the sound of metal grating as she enters the lorry. The doors close.
..
A blue clipboard, signatures impressed and documents exchanged.
…
Over an hour later, the lorry arrives in the slaughterhouse yard. The ramp is lowered and Debbie walks down taking a springing step as she reaches the final groove.
…
The driver returns to the lorry and collects the clipboard - a man wearing white clothing and a hard hat calls out a number, the driver repeats and verifies, more forms are signed.

Fieldwork notes, Friday 6 December 2002.

What interests me in the moment above is the exchanging of paperwork and calling of numbers. As animals would come and go from Folly Farm I became aware that each animal was accompanied by its own passport, and that each journey necessitated the completion of a 'movement card'. In addition to following Debbie to the slaughterhouse, and watching the paperwork being exchanged, I also obtained permission to return to the slaughterhouse on two further occasions to observe animals being off loaded and put into holding pens. Moreover, I interviewed a health and safety inspector who enforces legislation on preparing animals for slaughter and the safety of slaughterhouse employees. But I was also able to trace Debbie's movement card and passport from the slaughterhouse to a government office. I spent two days at this office following the cattle passport scheme; observing and interviewing staff in the main departments: corporate affairs, data registration, passport operations, call centre and deregistration; and working informally alongside staff in the postal room x-raying mail and sorting it into the appropriate bin.

Yasmine

Martin scoops his arms round Yasmine's legs, the front and back coming together, he walks to the back of the trailer, puts her in - head first- flapping her back legs. "Yasmine stand still", *Martin uses his arm to push her head in and puts the top grate down.* "Good girl"…*a sucking noise*

…

on the road…one hour later at a calf auction. - in a pen with seven other calves, mooing

…

A man in a suit announces "Lot number…" - *then jumbled words.*
There are about 25 people wandering in and out, elevated and separated from Yasmine by circular concrete bars.

…

She emerges from behind the auctioneers stand, walking on concrete with a slight layering of sawdust.
A man wearing green overalls and jeans is bending over, slapping her… placing both of his hands on her back - pushing her round the ring when she stops.

..

Waving fingers, the hammer bangs.

…

Sale over - off down a narrow ramp to the right of the auctioneers stand, a man in green grasps hold of the top of Yasmine's legs almost lifting her down the ramp. A metal gate closes. On to another man in black, hitting her on the back - leading her to a different pen.

Fieldwork notes, Monday 14 April 2003.

This incidence led me to contemplate how cattle are handled by humans (Yasmine and Martin, Yasmine and market staff) and the pieces of equipment that facilitate this handling (metal barriers, holding pens, sticks). With regards to the first aspect, in addition to watching Martin handle cattle on Folly Farm, I made eight visits to two cattle markets over a six month period (April – November 2003). With regard to the second aspect, three companies manufacturing restraining facilities for cattle participated in my research. Two of these companies manufactured crushes (Martin uses these on his farm to restrain animals during veterinary treatments), and one company manufactured portable weighing systems (used at the market). I was able to interview four people involved in the research, development and marketing of these products.

3.23 Methodological Practices

In the last chapter a number of examples pointed towards how animals were understood in accounts of dwelling and performance (parts 2.4 and 2.5). Methodologically, I now want to suggest that the sites, spaces and things documented in the previous section extend these accounts in hinting at some of the ways in which participants (cattle, humans, non-humans and inhuman) are coming-together. In other words:

> putting questions to an emergent object of study whose contours, sites and relationships are not known beforehand, but are themselves a contribution of making an account that has different, complexly connected real-world sites of investigation (Marcus 1998:86).

In this way, the emancipatory potential of my fieldwork - the experiences of the animals themselves (figure 3.4) - signal a kind of co-dwelling. But how have I attempted to apprehend the multisensual worlds that are being described in the empirical moments above? How does this co-dwelling extend beyond mere recognition to the actual practices that 'we' (cattle and I) have undertaken?

In preference to making use of a cluster of methods, which are nearly always cognitive in origin and effect (interviews, focus groups, questionnaires) leading to what Thrift (2000a:244) describes as the 'logic of the corpse' - I want to draw upon a repertoire of qualitative methods that value and work with everyday activities as they occur (Thrift 2000a:216), ordinary activities that give no notice of what they will become yet make differences to the ways in which you and I experience other humans, animals and the inhuman (Lorimer 2005)[23]. The qualitative methods that I have used broadly encompass the perceptual (observation), visual (photography), auditory (sound recording) and textual/linguistic (discourse analysis/interviewing). What brings these methodological approaches together are the ways in which I draw upon non-representational theory (part 2.5) to attend to what is happening and what is taking place in ways that oscillate between knowing, understanding and doing; thus recognizing linguistic and non-linguistic performative ways of being in the world. As Thrift (2003a:2020) puts it:

> doing - has vocabularies of staging and layout, and knowledges of the way in which different stagings and layouts call forth different dramatic effects, which are vital to our understanding of how bodies are sent about their daily business, positioned, and juxtapositioned in ways which think the world without drawing on cognition.

[23] In contrast to this 'deadening effect', non-representational theory (see part 2.5) is finding its way into qualitative methodologies. NRT aims to cultivate more participative and affective styles of thinking and working, where presentation is taken more seriously (than representation) (Thrift 2000a).

In what follows, rather than provide a general overview of these four main methodological modes, thus defining and offering descriptive accounts for which there are numerous guides, I want instead to explain how I applied these methodologies in the context of my research.

Perceptual Practices

Immersing myself in the reptile house with Mr and Mrs Big (part 3.11), being with Margaret and other cattle at an agricultural event and on Folly Farm; here we have a series of concrete, empirical instances bringing about processes of observation on a par with what Thrift (2000a) describes as 'observant participation'. In other words, this is about in coming close to the animals themselves in ways that recognize how the various skills that keep the world moving are grasped and employed. In this way, I have been visiting Folly Farm and spending time with cattle since June 2002, making between one and four visits a week, sometimes staying for an hour, oftentimes a whole day. Over this period of time I have acquired a rich set of observations, often noted in my research diary, that record the performative acts that animals engage in; from 'mundane' happenings that unfold everyday on the farm - eating, milking, sleeping; to detailed 'events' - Margaret being artificially inseminated, Heather dying. But I was not merely in the shed, parlour, field and so on, somehow watching these things as they unfolded, rather as the moments I have depicted show, I too was actively engaging with cattle - stroking Joanna, reassuring Yasmine, sitting with Melissa; and importantly the animals also engaged with me - being licked and nudged by Margaret and urinated on by Beryl. Furthermore, I spent time following Martin as he went about his everyday practices, checking on and milking the herd. Moreover, my attention moved beyond Folly Farm to other sites: barn, feed mill, manufacturing facilities, office, slaughterhouse, supermarkets, veterinary departments, warehouse, yard; making a visit (0.5 days) or series of visits over a prolonged period of time (set out in appendix IV). Beyond the farm I not only followed 'things' at these sites but actively contributed to the making of materials in assembling milk cups and jet streams on a factory floor, stuffing envelopes in the office of an animal welfare charity and spending the day in the barn with a group of chickens and animal rights campaigners. This time spent with others (human and animal) in a range of settings has been complemented by visual, audio and textual methods and I now outline each of these in turn.

Visual Practices

The visual methodology which this thesis draws upon is photography (further information is contained in appendix V). Within geography, and other disciplines, however, there exists a deep mistrust of the visual image. Amid accusations of 'academic tourism' or 'objectification' (Crang 2003a) it has been claimed that academics are in danger of using images in a purely illustrative, archival or documentary way, thus failing to analyze them (Driver 2003 see also Pink 2001). In responding to these claims I want to make a transition from regarding images as 'showing what it is

like', a space that I as a researcher might colonize; to 'denoting places, times and experiences' (Radley and Taylor 2003), where the practice of doing becomes as important for its 'processes of doing' as for its results (Thrift 2004b). How might images convey that which is transient and emergent rather than the fixed and still frames? How can visual images be seen as active spatial-temporal expressions rather than passive representations?

In responding to these questions I want to stress my commitment to involve cattle as subjects in the process through which images are presented in the thesis, for I believe that the real work of photography comes beforehand, and the insights that flow from individual photographs stem from forming a relationship with animals (Nast 2005). I did not, then, take a camera to Folly farm, the agricultural show or some of the other sites that I visited (the feed mill, manufacturing facilities, public demonstration) (refer to appendix V) with the intention of catching some off-guarded moment, but I actively sought to work against such staging by taking pictures more through instinct, to somehow 'indicate' the everyday, mundane and often mysterious ways that humans and animals dwell in the world. The photographs inserted in this chapter then carry:

> a trace of what was there when the shutter snapped, and so they reassure us... what they picture - really existed... the actual effect of seeing 'what has been' depends on, and is unique to, a particular viewer (Rose 2003:8).

The images of cattle evoke how they are present and absent, and speak to the corporeal uniqueness of each animal as an individual. Moreover, they stir memories in me, not necessarily of why I took these pictures, but of the place, the intimacy of our relationship. On a cautionary note I want to emphasize that these images have been deliberately labelled 'Margaret', 'Melissa', 'Teresa' and so on as part of an attempt to recoil from explanation, the what where and why that can lead me to inadequately narrate their lives. These pictures are no substitute for encountering cattle in the flesh; there are silences and pauses here that speak to something beyond words (Rose 2003). With this in mind I am drawn to the work of Edensor (2002) whose website features photographs that attempt to provoke an invisible record of co-presences and forgotten regimes of work in ruined spaces. Edensor (2002) makes a series of remarks alongside the images but lets the reader form their own view; to imagine wild beings emerging from the rubble, textures (fungus, bacteria, moss) and the ghostly presence of humans (signs, overalls, hats)[24].

---

[24] Please note: another mode of visual expression – video recordings – were also gathered. Here I made a series of recordings at Folly Farm, sometimes as part of a deliberate attempt to 'capture' events such as milking, but for the most part in unplanned and unintended ways (further details are contained in appendix V). This material has not been included in the thesis. This is because the animals altered their practices and behaviours upon seeing the camcorder, and in this way I believe apprehending contact with 'real cattle' through these video clips is filtered. I am thinking here, in particular, of how senses, emotions, experiences and intuition are liable to be misunderstood. Therefore, for me, it is not enough to insert video clips merely as part of an attempt to offer a different style of empirical presentation (see also part 3.3). I do not, however, want to be misunderstood here, for it is not my intention to set up a series of dichotomies between visual registers, or to suggest that some methods are necessarily more appropriate than others in terms of making something visible and present.

Audio Practices

Social scientists have long shown interest in the sounds that cattle make. Schafer (1977) and Poysko (1994), for example, have examined the soundscapes of cowsheds to explore the relationship between animal sounds and the noise of milking equipment. My own use of the term 'audio practices' is intended less to signal these technological themes and more to gesture towards the kinds of openings that recording the sounds of cattle open up. I made a series of recordings during the course of my research; of Margaret at the show and mundane happenings on the farm: cattle eating, being milked, standing outside the parlour, leaving the farm, and in the shed (outlined in appendix VI). In this way, the audio journeys that I undertook follow my approach to visual practices in that these were not pre-planned but based upon instinct, sometimes lasting a few minutes, other times lasting for hours. These recordings, though not inserted in the thesis, are nevertheless important in opening the listener up to the multiple narratives being enacted, from the flow of visitors and moving of straw at the agricultural show to the silences and then mooing and moving in the shed, and in this way these places with which I am familiar are rendered anew as other presences and resonances are called into being and witnessed through acts of listening.

Textual Practices

Discourses and texts, books and tables, diagrams and maps, are just as much a part of my research practice as the images and sound recordings that I have taken. Indeed, Davies and Harre (1990) contend that the power of discourse is in its provision of subject positions. The self and others are constituted and reconstituted as one moves between different discourses. On this view, then, there will always be a gap – plunging between being with cattle at Folly Farm and their prior linguistic construction in terms of farming, animal health and welfare. In this way, the task of the researcher is to produce a way through this linguistic process (see Massey 2003). Swan and McCarthy (2003), for example, analyzed animal rights arguments on the internet illustrating how the subject position created for animals sought to evoke sympathy, shock or guilt in the reader, of animals being oppressed victims entitled to justice and liberation. Wolch et al (1997), on the other hand, have focused on the print media in exploring coverage of cougar related issues in southern California. Using content analysis they correlated increasing human-cougar interactions and scientific and political controversy with public concern about cougar management. In comparison, the textual practices that I have undertaken have been more fragmented and less comprehensive in that I did not follow procedures outlined for analyzing textual materials (see Gill 1996; Potter and Wetherell 1995). Moreover, rather than adopting a systematic methodological approach, for example, reviewing one newspaper over a ten year period and documenting individual articles of relevance to the study (Wolch et al, 1997), I read a range of materials (listed in appendix VII) from the farming press, national broadsheets, the internet, policy documents, company reports, technical papers and academic journals for two reasons. Firstly, I needed to expand my skills as a geographer because

some of the sites that I visited and things that I followed required some basic understanding of veterinary medicine and the specialist research fields of feed science and animal welfare. Secondly, I became concerned with obtaining a range of perspectives and tones - scientific, agricultural, philosophical; on issues such as pharmaceuticals and biotechnology, farming practices, animal welfare and rights, animal disease and human health. In particular, I became interested in the discursive strategies that were being employed through these texts and in the rearticulation of linguistic construction. How are animals known and constructed? What is the nature of human-cattle relations that are being created through these literatures? What themes and strategies then can be identified?

Talking Practices

I often used my familiarity with some of the terms, phrases, issues and debates in these texts as a tool in planning topic guides when preparing to conduct interviews (for further information please refer to appendix VIII). In total, I conducted seventy four interviews, each interview lasting between forty-five minutes and four hours. Moreover, although I utilized qualitative methods textbooks to encourage and help me to prepare and manage interviews, come up with topics for discussion, and think through a range of issues regarding positional and analytical rigour (see Baxter and Eyles 1997; Frey and Fontana 1994; Kvale 1996); each of these interviews were semi-structured or unstructured, oftentimes taking the form of conversations (see Burgess 1982) as I walked around Folly Farm with Martin, or assembled objects on a factory floor, labelled boxes in a warehouse and so on. My interest in interviewing is precisely in these unfolding moments of talk (Smith 2001), moments which unsettle that which is recorded in textual documents or established in company policies. Consider the following empirical instance:

> The industry as a whole is extremely well regulated. What you might expect, reasonably expect, from the human medicines market, it's not that much different with veterinary products. Subsequently, in developing and getting a drug authorized...it's very well controlled and getting more so...in the last ten years at this site we've had to invest something like £15 million into refurbishing and to comply with changing interpretation of guidelines
> *[the interview is interrupted by a telephone call]*
> those are the studies we need to do to fit in with our timescale...yeh...we'll need another consignment, about 30, 40 should do it
> ...
> Um, sorry about that.
>
> Interview with Simon, research and development team, pharmaceutical company G
> Wednesday 19 February 2003.

On the one hand this quote, transcribed verbatim, is important in enabling participants to reveal and express meanings in their own words; on the other hand, there are emphases beyond the words themselves that can be drawn out. But I do not want to be misunderstood here in suggesting that people are unable to verbally and cognitively articulate their practices. Rather I am thinking here of how the 'consignment' – what I later discover to be rats - and the experiments that will be conducted upon them is difficult for Simon to discuss; the pauses, gaps and silences that are not confined to the words written on the page[25].

My attempt in this section to articulate the journeys that I have taken over the last four years, encompassing observations, interviews, recordings and diary keeping, I think, begins to sketch out human-animal relations on more-than-human terms (Abram 1996; Whatmore 2002) by inviting 'others', in this case (individual) cattle, to be present in the research by describing their everyday practices and expressions and tracing their lives beyond Folly Farm through networks of science and technology, architecture and design, food and policy.

3.24 Issues

In the third and final part of this section I want to outline some of the issues emerging from the theoretical literatures and methodological journeys that I have taken. These issues are broadly clustered around three themes: access, sequence and ethics. The discussions that follow are not intended to be generalized or exhaustive but to instead provide a flavour of how they have played out in the course of doing this research. Furthermore, a series of questions signal the ways in which I am still thinking these issues through and have not, and perhaps never will, come up with resolutions or conclusive answers. Crucially, integral to all three of these issues is how to research with cattle, how to inhabit the spaces and lives of animals.

Access

When I began this research three years ago the main difficulty that I initially had to overcome was gaining access to the sites, spaces and things that I was hoping to research. Meeting Margaret at the agricultural show and travelling back to Folly Farm with her opened up contacts to feed companies, veterinary specialists, equipment manufacturers and so on but I then had to attempt to explain the purpose and value of my research accurately and unambiguously to individuals, groups and multinational companies. Positioning myself as a geographer was in some ways a hindrance, for I was not a vet, engineer, scientist or policy-maker and nor am I from a farming background which, in practice, meant that the worlds in which I wanted to immerse myself were unfamiliar. I did, however,

[25] A consistent system of transcript notation will be used throughout this thesis: an omitted section within a single line of dialogue is represented by three full stops (...). Three full stops between two separate lines of text are used to signal a pause in the conversation. A longer omission, where a participant's entire comment has been removed, will be represented by two square brackets ([ ]).

use this geographical lineage to my advantage and in approaching potential research participants I sent them a 'project outline' (an example can be found in appendix VIII) describing how "geographers are interested in the cattle industry as a system, comprising of networks of producers, suppliers, distributors and consumers"; situating their participation within the themes that I was interested in pursuing, reassuring them that my research was independently funded and importantly, that any participation would be covered under the data protection act and their anonymity assured. But even these imperatives did not always enable me to access the type of organizations and groups with whom I was interested in researching. For example: an equipment manufacturer pulled out of the research because they became involved in a legal dispute, a pharmaceutical company withdrew because of issues relating to corporate confidentiality and animal experimentation, and two farmers refused to participate after finding out from one of their neighbours that I was a vegetarian.

Upon gaining access to individuals, their research and places of work, the contact that I was given 'on the day' oscillated between 'seeing the public face' where my visit had been planned and there was an itinerary to follow, to being regarded as 'no threat whatsoever' and almost unlimited access being provided. For example, one of the pharmaceutical companies that participated (company G) initially invited me to interview the head of research for their U.K division, on the day however I found myself being given a guided tour, even being allowed to watch from the door as rats were being experimented on and lab samples processed, and interviewing other members of the team responsible for a £5 million investment in a cattle drug.

Sequence

Following on, the second issue 'sequence' not only emerges from a desire to avoid building up a representational picture, but also from this uncertainty of what access might entail. For example, companies involved in researching and designing new parlour equipment were reluctant to allow me to trace objects amid concerns that I might pass the information on to competitors. Oftentimes companies involved in research with university veterinary departments and laboratories were disinclined to discuss these matters because of previous visits by animal rights groups intimidating staff and damaging property. But this non-linear sequencing echoes back to Folly Farm, and crucially to the animals themselves:

I find myself thinking what the animals might do if Martin didn't impose a structure to their day. What if I were to inadvertently leave the gate open, how would Margaret and the other cows react? Ignore and stare? Or, head off up the lane, the main road, eventually reaching the dual carriageway? What would happen if Martin was very late for milking one afternoon or didn't turn up at all, what would they do? How has Margaret been conditioned to be treated in particular ways?...But the more I ponder these questions the more I realize that Margaret and the animals act and perform in this place beyond human imposition; rubbing against branches and bushes, moving across the field, interacting with each other.

Fieldwork dairy entry, Tuesday 2 July 2002.

I want to draw out three matters that materialize from this diary entry, things that I continue to think through. Firstly, it is important to acknowledge how my relationship with the cattle and Martin affected the material that I could access and collect. I am thinking here of not merely being allowed in the field with cattle, but eating alongside and touching them and following Martin around for hours, days, weeks and months at a time, but also my anxieties that my feelings on a particular day affect what is recorded. Consider the following empirical example

Fieldwork appeared very straightforward - go to the farm, spend time with the animals, make a few recordings, come back to the office and write about it. Today something challenged this simplistic position. Heather died, it's a shock for everyone, Martin, the herd and me.

...

[Friends, family and colleagues] don't understand what it's like being on the farm with the herd day in, day out informing me that "they're going to be killed anyway".

I stayed with Heather in the field while Martin called the vet. The other cows were there too, it was almost like they knew, they stood and watched and bellowed sporadic moos. And Heather felt like stone, all cold - not the body heat I am used to expecting; lying there quietly, motionless, not responding.

...

The vet arrives, nothing can be done, he shoots Heather. The click boom echoing through me even now, several hours on.

Fieldwork diary entry, Friday 11 July 2003.

At this moment I am not concerned with what is being recorded - what should I do? Take Heather's picture perhaps, or tape the distressing sounds that she and the other cows are making? Or write down verbatim everything that the vet is telling Martin? No, in this moment, there is no point in collecting 'data' and this does not register in me, rather Martin and I are only concerned for Heather.

The second matter that materializes from these moments is how to attend to animal traces: how can I deal with the fleeting - that which is here today and gone tomorrow, only to reappear again the day after tomorrow (after Whatmore and Hinchliffe 2003a)? For example, the herd on Folly Farm cluster into specific groupings, and on occasions one of the cows has moved to a different group, only to return to its previous group at the end of the day. Or, an animal will exhibit signs of being unwell, and unlike Heather, make a miraculous recovery before the vet arrives. Or, the milk yields may fall substantially in the morning milking session only to improve in the afternoon. What I am suggesting here is that a series of things unfold on Folly Farm that I wasn't prepared for, and these things can also unfold in instantaneous moments; nudging each other, removing flies, watching a passer-by.

The third and final point that materializes from these moments are the important ways in which the animals themselves can decline to participate. On one occasion, in the shed, the animals were making shuffling, chewing and mooing noises. Upon getting the tape-recorder out of my rucksack all the sounds just stopped and two of the cows (Barbara and Melissa) began to stare. On another occasion, when attempting to take a picture of Ruby, she lunged forward dumping so much saliva and phlegm on my camera that it degraded.

Emotions

The final issue that I want to explore in this section is what Probyn (2000:1) refers to as 'gut reactions', these are: small ethical scenarios that evolve through modes of living and register most forcefully at the level of the guts. I want to address the gaping void between knowing and intervening in the world, or, as Anderson and Smith (2001:8) query: "what possibilities are there for developing a geographical agenda sensitive to the emotional dimensions of living in the world?" I offer three sets of answers.

Firstly, I want to acknowledge how ill-prepared I was in responding to the animals, humans and situations in which I was absorbed. I find myself occupying positions between social scientific literatures that outline issues relating to informed consent, privacy, harm and exploitation (see Cloke et al, 2000); and animal science literatures that focus on clinical governance, availability of care, premises, facilities and equipment (see RCVS 2003). Moreover, before commencing my research I had to complete a 'Research Ethics Monitoring Form' (appendix IX) for the School of Geographical Sciences 'Research Ethics Committee'. In many ways, despite reading literatures and completing forms, these protocols often bore little relation in working through the actual practice of research (see Bennett and Shurmer-Smith 2001; Crang 2003b). What I mean is that these literatures were often worlds-apart from the negotiated practices and accountability in the field: from instinctive

astuteness of when to leave Margaret alone to my reactions to Heather dying. I found myself 'muddling my way through' numerous ethical challenges as they presented themselves.

Following on, my second remark concerns the boundaries often used to understand and distance 'academic research' from 'the person carrying out the research' (see Cloke 2004) and how any notion of these collapsed through my visceral engagement with the world. Perhaps registering most forcefully at the level of the guts are my vegetarian beliefs. On becoming a hindrance, with two farmers withdrawing from the research, I decided not to disclose or hint at this information with other participants. I felt that this was necessary because of the nature of the organizations (slaughterhouses, farming groups) and because I was not, and am still not, certain of its relevance. However, this did cause problems when being taken out for dinner and having to choose a vegetarian option from the menu without drawing attention. Additionally, since I was ten years old I have supported animal welfare causes, raising money and helping out at the local animal shelter. In this way I had predicted that I might be sympathetic towards animal rights and animal welfare groups. But as my research progressed, I found myself empathetic towards participants who were involved in activities being deplored by animal rights groups. For example, I watched Vanessa (a scientist who conducts experiments on animals) checking her car for bombs, unable to let her four year old son collect his birthday cards from the mailbox; and I visited a feed mill that had been targeted the previous week by activists who inserted viruses into computers and chained themselves to equipment. Four years on I am no longer certain where to draw the line between what is and what is not academic research (see Cloke 1997a 2004) and I find that I am increasingly asking myself 'how should I live my life?' What of the clothes that I wear, medicines that I take or paint on my walls that may have derived from cattle (see part 1.24)?

My third, and perhaps most crucial remark, concerns what I perceive as my ethical responsibility to the animals with whom I have researched. And I want to end this section by posing a series of questions that I am still thinking through. How are cattle empowered, if at all, in the process of recording sounds or taking pictures? How can the presence of animals register in the thesis where they are not somehow being represented and pilfered for the advancement of academics (after Crang 2003b)? How, precisely, can I move beyond the functional and productive narratives in chapter one so as to find individual animals (Margaret) within facets of collectives? How are cattle involved in the ongoing production of the work?

I visit companies and organizations wearing a suit, interview guide and tape recorder at the ready. But most of the time down on the farm I'm not sure what I'm supposed to be recording and making notes on, encountering cattle is very different. More often I think it's about being there with them but then I find myself having to justify why this is important. Amid the events and happenings that unfold everyday I find myself questioning 'what are the most important parts?' I have considerable anxieties where I oscillate between feeling as though I haven't recorded enough to fearing that what I have collected will simply glide over animals. I am uncertain what all the things I've been doing might indicate.

Fieldwork diary entry, Thursday 2 October 2003.

These questions and diary entry touch upon the ways in which I am still working through how the materials, sites and things that I have travelled with unfold into the lives of individual cattle, and indeed how the animals themselves reverberate and respond through these methodological wanderings.

3.3 Animating

> The traditional structure of a thesis...consists of the following elements...introduction, methods chapter, theory chapter, presentation of data, development of argument, conclusion. Such a structure is based on representational assumptions about writing (Game and Metcalfe 1996:94).

In the previous section of the chapter I described the kinds of empirical materials that I have gathered. In particular, I emphasized how these materials were at various stages in their design, production and consumption and the importance of this in avoiding building up a complete picture of an animal, object and so on - a representational set-up. In this third and final section of the chapter I want to explore what to do with the materials that I have collected: how can I use these materials to animate the lives of cattle? This section is divided into two parts. The first part separates out a 'squirrel-acorn' sense of collecting and hoarding data (Crang 2003b:139; Whatmore 2003c) with the displacement and gap between collecting materials in the field and writing this thesis. In recognizing this gap, I seek to explore how I might write with animals. In the second part I respond to an emerging set of concerns about performative, non-representational styles of work. Extending ethical discussions from the previous section, the key step that I take here is to consider how research can be more than just research. What are the ethical and political effects that result from writing with cattle? What is the relationship between presenting empirical material in this thesis and having a commitment to those (human, animal, inhuman) with whom I have researched?

3.31 Liveness, resonances and spaces of dissemination

> *I thought the hardest part would be coming up with an outline and plan of the thesis, making decisions about what to include...This afternoon I've been listening to the sound recordings that I made with Margaret at the agricultural show a long time ago. ..I'm no longer certain what it is that I am listening to. I recognize Margaret's moo - her tone and pitch and the vibration of the chain - and I am sure that it's her, but the sounds also seem muffled, recycled and amplified, something that I wasn't prepared for...So I got out the pouch of hair from her tail that fell off as Martin vigorously brushed her. It's a mixture of sandy-white coloured clumps with bits of sawdust and straw. It doesn't smell of her anymore - of the animality of her in any way, her hair is still soft but it's dry and has formed into a clump...I'm disappointed that Margaret has become a trace. Yes I can recall getting out the tape recorder and picking up the hair, although not the exact reasons why, and both do evoke memories of being at the show, but senses and feelings are all in some way lost.*
>
> Fieldwork dairy entry, Saturday 6 December 2003.

For me, this diary entry signals the disparate nature that I began to feel between what I witnessed and collected in the field – the perceptual, audio, textual and visual journeys - and my anxieties and frustrations at how to make these materials matter in the thesis, of how to convey and express animals in writing. Thrift (2000a:235) describes how some things that happen, things that are performed in the world, cannot be written down - they are unthinkable, unsayable, unstable - and he illustrates this in writing of a particular event, the death of his father[26]:

> I feel a need to write the event and yet, as I make clear in this paper, I am not at all sure that this is what I want to do. In a sense, I believe that this writing down is part of the problem. I do not want to take over my father's being by making him into fodder for yet more interpretation by colonizing his traces...I am not sure, in other words, that he needs writing down, or, put another way, we need a form of writing that can disclose and value his legacy - the somatic currency of body stances he passed on, the small sayings and large generosities, and, in general, his stance to the world - in such a way as to make it less important for him to be written (Thrift 2000a:213).

Here I want to explore the relationship between the living event and its traces and memories through the act of writing it down. In so doing I want to signal how materials are inescapably transformed as they travel between 'being in the field' and 'written in this thesis', photographed and presented, recorded and translated, talk and text. This gap, between liveness and a series of after-images (Melrose 2002b), are what Phelan (1996 1997) describes as one of the deepest challenges in writing about performance: recognizing that the performance itself disappears.

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[26] I do not want to be misunderstood here. In no way is it my intention to equate the event that Thrift is describing with my (human) encounters with cattle. Rather I cite this work as an example of the difficulties of vocabularizing 'others' and ourselves, researcher and researched.

> Writing about performance has largely been dedicated to describing in exhaustive detail the mis-en-scene, the physical gestures, the voice, the score, the action of the performance event. This dedication stems from the knowledge that the reader may not have seen the event and therefore the critic must record it... The desire to preserve and represent the performance event is a desire we should resist. For what one otherwise preserves is an illustrated corpse, a pop-up anatomical drawing that stands in for the thing that one most wants to save, the embodied performance (Phelan 1997:3).

How can I avoid creating anatomical drawings through this thesis? How can I abstain from developing concrete meanings and authoritative knowledges of cattle? With Phelan's point about describing performance in mind, the interpretative strategies that I offer pursue a series of questions: what kinds of understandings of animal lives do these methodological practices present where I, as a human, am not seeking to have the final word (after Hinchliffe 2003:222)? Specifically, how do these practices admit the embodied agencies of individual cattle, extending insights into their (interior) corporeal experiences – feelings, sensations and emotions (after Philo 2005)? How do they enable one to grasp some of the ways in which cattle, as living fleshy beings, perceptually engage in the worlds they inhabit? Working these questions through in forthcoming chapters, I want to use the materials collected through observation, photographs, sound recordings, texts - and recompose them in ways that provide a sense of what it is like to be with an animal in different times and spaces. The material used in this thesis is not intended to provide a representational picture, to 'join the dots' (after Dewsbury 2000) by way of offering an interpretation of Margaret's presence, for what I want to do is hold on to the open-endedness of my research. Consequently, my recomposition of empirical materials has taken many forms: opening up 'fieldwork boxes' and handling objects, packaging and other 'stuff'; spending odd days over a period of months with a flip chart, creating collages of words, quotes, drawings and memories; ongoing conversations with research participants and academics. Somehow the materials emerging to form thematic parts [bodies, spaces, ethics] rather than the 'lifecycle places of cows' approach I had anticipated at the outset[27] (detailed in appendix II). In this way, I think that there is an awkwardness relating to how materials are gathered and interpreted. I want to conclude this section by outlining three such difficulties.

Firstly, there is a contradiction and tension at the heart of what I am trying to do. I may fail, the writing may back-fire leading to the flattened topology and asymmetry that I have argued relational accounts provide (see part 2.3). How, then, can I avoid transforming animals, things, spaces and places into a single narrative account and assigning individual animals characters with parts to play out? In particular, there remains an anxiety in me concerning the way in which I have presented ethnographic material in this chapter. How can I write 'other-wise' (after Bingham 2003:151) so that I might convey in words my experiences of being-with Margaret at the agricultural show - the way she moos and how this resonates in others and in me? Doel (1994) suggests that what is needed is a

[27] To be clear, I am not saying that something else cannot be made out of these materials. Indeed that is why I am suggesting that the thesis is not a final product of my research.

form of 'radical passivity', of letting the other be so that it does not belong, conform or submit to the same. But, in practice, this is not easy. In this chapter (part 3.12) and previous chapters (see parts 1.13, 1.33, 2.1, 2.4) I have highlighted the difficulties of making scientific claims about animals without indulging in what may be perceived by other scientists or artists to be anthropomorphic interpretations. This leads me to query whether I too could be accused of indulging in anthropomorphic tendencies - am I ascribing human qualities and characteristics to Margaret and other cattle? You may perceive the moments presented in this chapter as nonsense - 'could have been written by anyone' - or sentimental - 'a fruitless attempt at (re)presenting animals'. In response to these critiques, there is growing recognition across natural and social scientific disciplines that anthropomorphism may be a logical starting point, an entirely appropriate tool for researching human-animal relations (Alger and Alger 1999; de Waal 2001; Holloway 2001; Laurier and Philo 1999; Wilbert 2000). I am thinking here, in particular, of Philo and Wilbert's (2000:19) call for a hesitant and reflected upon anthropomorphism that avoids hard anthropocentrism. This anthropomorphism:

> would allow the possibility of insights to be produced from considering *some* non-humans in *some* situations as *if* they could perceive, feel, emote, make decisions and perhaps even 'reason' something like a human being (emphasis in original).

If you perceive the empirical moments I have written through this chapter to be anthropomorphic then I would like to make it clear that the anthropomorphism I am seeking to excavate cannot be easily aligned with scientific accounts that seek to 'represent' or 'speak for' animals, a perspective that leads to an emphasis on human viewpoints - a 'how would you or I feel if we were Margaret?' Instead, I am proposing an anthropomorphism that emerges from being 'under the skin', from inhabiting and spending time with animals. This is best seen as part of an attempt to look at the life and living spaces of an individual animal - to imagine an animal's umwelt without somehow translating this into a human perspective. In this context, the empirical moments presented here, and in forthcoming chapters, can be viewed as a hub of potentialities, a series of what-ifs (after Dewsbury 2000). Let me be clear, this does not mean that I am not sensitive to the ways in which I have dominated and controlled what has been collected and what is being written (Phelan 1996; Pollock 1998), but rather "I'm here, but I'm not what's important" (after Carvalho and Tolia-Kelly 2001:119).

Secondly, I am wondering how it might be possible to attain a performative style of work. By this I am referring to how one might present journeying through the weaving of words, pictures, images and sounds amid familiar everyday scenes in ways where the work itself is not at a standstill but ongoing and relational. Two problems arise here. On the one hand, there remains a general unease around artistic prose and styles within academic work (see also part 2.5). It is important to

acknowledge that I cannot write in a creative way, take photographs from a certain perspective, or make a very good interviewer (and indeed this point may well be illustrated through my own attempts to integrate empirical material). In response I would argue that if one dwells on such questions it returns us to a position where there is one way of seeing and picturing the world and describing it in words; a single truth through which the world can be represented (Mead 1995; Newman and Holzman 1997). Or, in the words of Pollock (1998:79-80):

> I don't think that performative writing is a matter of "anything goes" or that anyone can do it any more than "anyone" can write "good" history or that "good" history is not fundamentally a prescriptive category with elaborate implications for evaluation... The answer... is thus not to write less but to write more... to make writing/textuality speak to, of, and through pleasure, possibility, disappearance and even pain.

In this way I am not referring to a performative style of work with a capital 'P' (after McCormack 2004:218) but aiming to write in ways that attend to the 'voice', 'style', rhythm and difference of individual animals.On the other hand, it is this commitment to offer ethnographically rich accounts of the animals themselves that leads to a further problem: am I being representational in my non-representational endeavour? How do I exit the representational set-up, if at all? If one returns to figure 3.4 it could be argued that this collage takes on an element of fixity and, furthermore, that I have been inadvertently privileging what I am claiming to dissent from - a 'humanist' perspective. In previous chapters I have set out some of the ways in which human representations of animals prevail in academic work (parts 1.1 and 2.1). In some instances this practice becomes a political resource in making welfare recommendations (see part 1.13 for example). It is important to note here then that a thing called 'representation' could permeate my research practices (see Castree and MacMillan 2004:480). I should like to make it clear, though, that I am endeavouring to convey the absences and fallibilities of animals in ways that do not rest entirely in my, or your, (human) sensibilities.

The third and final difficulty is how my research with animals can be seen as more than just research. Where does the instability of journeying with cattle through sites and spaces stop and commitment to animals themselves begin (after Massey 2003; Gleeson 2000:65)? To the human participants in my research I have offered written transcripts of the interviews and copies of photographs, often I have been asked for feedback and e-mailed a questionnaire for completion. To the animal participants this line between what is gathered in the field and what is disseminated to respondents cannot be so neatly delineated. For even at this stage of writing my thesis I continue to go to Folly Farm to spend time with Margaret and the rest of the herd. I passionately believe that it is important to do so, thus enabling me to involve animals in the ongoing production of the work, for I remain intrigued,

amazed and shocked by some of the things that the animals do - chasing, escaping, gesturing[28]. However, the thought-provoking question that I find myself grappling with, and this is something that I find difficult to articulate is: what can I give back to Margaret and other cattle who continue to participate in my research? What, precisely, is the ethical impetus here?

3.4 Conclusion

> ... our materials speak back to us; they may resist our analyses; they may push us in new directions (Crang 2003b:143).

In this chapter I have outlined various methodologies drawn upon by animal and social scientists in studying animals. In so doing I have argued that the focus is all too often on humans rather than animals and this has led me to question how animals might become the focus of academic research. In this endeavour I have drawn on my relationship with Margaret to hint at how I implicated myself in her life and living spaces (after Cloke 2004:99) and the ways in which she and other cattle have shaped, held together and changed the sites, spaces and things among which I journeyed. In the final section I explored the relationship between travelling with materials in the field and how these are transformed through what is written down, thus thinking through what effect different methodological modes make to the outcome of the research process. But this chapter raises difficult and troubling questions: does there remain a tension between my ability to recognize the differences that define another animal's world? And just what am I doing in other (animalian) lives and spaces (after Denzin 1997:121)?

With these thoughts in mind, and as a result of my accentuation of Margaret and other animals, I think that it is important to be aware of the wider implications of researching with individual animals. Importantly, how do the research practices that I have described impede my ability to feed into wider debates in animal geographies and nature-society relations? The methodological practices that I have outlined can be seen to both extend broader discussions on human-animal relations and illuminate the inherent tensions in this diverse corpus of literature (see parts 2.2 and 2.3). A couple of points to take forward from this.

First, work in nature-society relations and animal geographies tends to focus on forms of collectivization to such an extent that what individual animals might bring to the collective - the fleshiness and potential 'creative' contribution of cattle - can go unnoticed as they become part of

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[28] It is important to note that when I began my fieldwork I anticipated spending June 2002-February 2003 with the animals at Folly Farm and planned to stop these visits so as to conduct fieldwork at other sites. I am not fully certain when, or entirely sure why, but this did not happen and I continue to visit the farm. In this way, perhaps the analytical questions outlined in this section actually begin to play out much earlier and later on in the research - through my encounters with animals?

'non-human lumps' absorbed into assemblages. With this in mind, what I am attempting to do in the course of my research is to disturb the sedimentation here. Let me be clear what I mean by this, for it is not my intention to ignore or omit the heterogeneity of human-animal relations and accompanying commitment to charting that which exceeds, disturbs and complicates (Whatmore 2002). And nor is it my intention to return to the ontological hygiene (after Graham 2002) of humanism. Rather my endeavour to *research with and for individual animals* allows cattle themselves to lead the research in all kinds of ways, instead of placing them silently and submissively into the spaces carved out for them in my original ESRC application (appendix II). This kind of research is, therefore, concerned with *questions of ontology* but rather than talk of blurring the boundaries between human and non-human, or giving rise to a politics of purity, I am experimenting with an alternative trajectory by moving into an individual animal's territory, opening up and enabling the animal to change me and thus the course of the research, and contemplating how they may change from being with me (see Cloke 2004). The key point to bear in mind here is my intention not to translate the (animal) other on to the (human) self, a trajectory that pervades existing work in animal geographies, but to be with and for the other (see Cloke and Jones 2003:199). Moreover, the methodological practices that I have outlined in this chapter continue to transport my research to places that I didn't know I was going to end up, and continue to change the ways in which I think about ontological ideas.

Second, I am left pondering, then, why my concern with individual animals has not been fully actualized within relational ontologies. Indeed, I have come to think, perhaps, that we (academics) have come to rely on the relational to such an extent that we now expect far too much from it. And we expect too much from it because to do otherwise would be to open oneself, and one's work, up to deep-seated doubts and uncertainties. The difficulty here becomes an *epistemological* one, culminating in the prevalent tendency to focus on what animals 'do' rather than what Philo (2005) calls the more 'interior aspects of animal lives'. The almost-sceptical argument playing out is how the problem of knowing the (animal) other translates to the problem of *knowing* the other (see Wolfe 2003a:46). This terminates in what Phelan (1997) calls 'trained blindness' so that we, through relational ways of thinking, are reducing life all the time. The residual muteness and shadowy presence of animals that pervades collectivization is, then, no light matter, for acknowledging this blindness might lead one to contemplate the importance of individual animals, their animalian ways of being in the world and happenings that are beyond their humanely derived lives. This does, however, open out a number of questions that I will need to consider in the remainder of the thesis. How far can you go in implicating oneself into the lives of individual cattle? How can their animalian lives and ways of being-in-the-world be rendered meaningful, then, in ways not solely on human terms?

The chapters that follow further seek to explicate how to research with and for individual animals rather than merely on them. Chapter 4, for example, explores a series of body-practices: breeding, milking and feeding; discussing how corporeal insights might be brought to bear in animal geographies literatures. Here I revisit social scientific theoretical work outlined in chapter 2 to discuss how cattle bodies become defined materially, aesthetically and virtually and to offer an alternative sense of corporeality where individual cattle can be seen as living fleshy beings. Following on, chapter 5 traces a range of places where I have encountered cattle. Extending some of the journeys depicted in figure 3.4, from laboratories and fields to policy-making and agricultural shows, the chapter brings together literatures on dwelling and non-representational theory to journey in different times and spaces, examining how animals co-constitute and re-constitute the fabric of some of these places in living out their daily lives. The final chapter situates these body practices and dwelt topologies within ethical relationships. Importantly, how might the ethnographic insights described through these chapters present additional consequences for ethics and politics?

4. The corporeal lives of cattle: breeding, milking, feeding

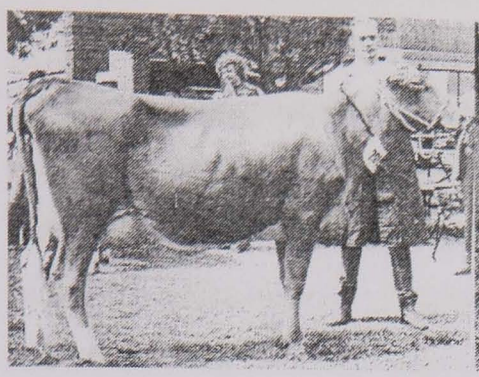

Figure 4.1: Caronia Dari Pansey Junior champion Guernsey cow Sydney Royal Show, 1975
(Hammond et al, 1983:77)

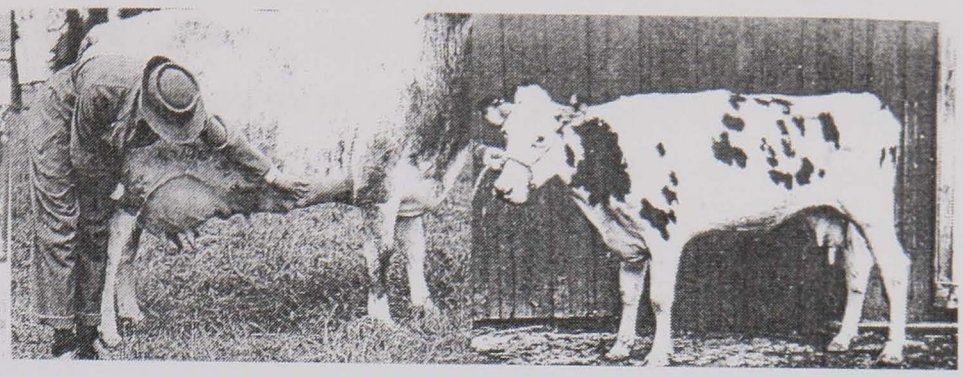

Figure 4.2: Inspection points on on a dairy cow
(Russell 1962:64)

Figure 4.3: Cow with salt deficiency
(Schmidt and van Vleck 1974:335)

4.0 Introduction

These three images document some of the ways in which the corporeality of cattle have been imagined and understood by human societies. It is in tracing these historical threads that I began to think about how the bodies on display here succeed in moulding new forms of animals. On the one hand, they achieve this by visually pointing towards what were perceived to be 'good' or 'desirable' qualities of cattle in the mid twentieth century - the accompanying text for image 4.2, for example, describing how "a heavy milking cow must have a large, well-developed udder with well shaped teats of convenient milking size, placed symmetrically and wide apart" (Russell 1962:65). In so doing, they also welcome the application of new technologies in farming, shown by the resultant media coverage surrounding image 4.1 as Caronia Dari Pansy became the first New Zealand cow bred from frozen semen imported from England (Hammond et al, 1983:76). On the other hand, these images portray the adverse consequences of farming practices all-too-willing to increase production at the expense of animal well-being. In this way image 4.3 shows the very thin appearance of a cow that had been experiencing a salt deficiency in its diet, the text documenting how "this deficiency has to continue for five months or more before appetite and milk production are affected" (Schmidt and Van Vleck 1974:334). What remains in these images is a tendency to focus on the bodily appearances of animals - udder, uterus, weight - in such a way that animals themselves are erased. What might animal experiences of malnourishment and craving salt, or being made to stand still in-line at an agricultural show be? In this chapter it is not my intention to provide an historical interpretation of the selection of desirable traits in farm animals. Instead, I offer these images as a way of demonstrating how the corporeality of cattle has occupied human thought for centuries (see also parts 1.11 and 1.33) and to suggest that what is perhaps most pertinent in the pictures are the ways in which these corporeal understandings are surrounded by a new sense of urgency as human knowledges and technologies have advanced (see also part 1.12, 1.13).

This chapter is divided into three sections, each one outlining a body practice connected with one of the images above, namely: breeding, milking and feeding. These practices have been chosen because they are intrinsic to the ways in which cattle lives unfold everyday on Folly Farm: the animals eat (hay, roughage, pasture) and ruminate; are milked twice a day (in the morning and afternoon); and the cows are made pregnant so as to be able to produce milk. But I do not want to be misunderstood here: it is not my intention to describe these practices under the guise of 'using farm animals for (human) food'. Instead, it is from spending time with the herd at Folly Farm that I have been able to document some of the bodily activities that cattle undertake that disrupt and surprise mundane acts of breeding (inserting a straw into a cow's uterus), milking (connecting a cow's udder to a pump) and feeding (filling a trough). To amplify this, each section begins by recounting an everyday moment in the life of one of the animals living on Folly Farm. It then moves on to follow some of the materials that make a difference to the bodily practices being described - frozen sperm, parlour equipment and concentrate pellets. These materials are not, however, traced in their entirety; instead fragments are offered through the use of images, quotes and descriptions of settings. And it is by looking at these fragments - often appearing as disparate tales about genes, sample cup and robot, feed and trough; on factory floors, warehouses and board rooms - that one oscillates between human understandings of animal corporeality that inform the creation of these materials and individual animals on Folly Farm responding to and indeed disturbing the properties of such materials. Crucially, each section continually reverberates back to this opening moment on Folly Farm as part of a deliberate attempt to think about how cattle might dislocate (human) understandings of (animal) corporeality.

The emphasis of this chapter then is in presenting a blueprint (animalian) world that problematizes the representational set-up and interpretation of empiricism surrounding images 4.1, 4.2 and 4.3; and speculative in taking animals themselves, their emotional and intuitive bodily lives, as disruptive to (scientific) knowledge production. To make this manoeuvre - a call to admit and weave the corporeal lives of cattle into the narrative - the chapter is conceptually framed and informed by three 'bodily modalities'.

Firstly, I am concerned with how cattle bodies are constructed, what I have termed the *'figurative body'*. That is, the discourses that humans use to try to understand 'the animal body' and the type of stories that they produce and circulate to achieve such understandings. Exploring the ways in which the body is socially mapped has received academic acknowledgement in geography (Demeritt 1996; 2002), environmental history (Cronon 1990; 1991), science and technology studies (Jasnoff 1996; Law 1986), and the sociology of scientific knowledge (Lynch 1988; Pickering 1993). What they all have in common is an attention to how mundane laboratory and field practices and local understandings provide the foundations of universalistic representations and belief (see also Brown

and Michael 2004; Roth and Bowen 1999a); thus questioning who or what is being constructed and for whom (Castree and Braun 1998; Willems-Braun 1997). Inherent in some of these approaches, however, is a tendency to overlook the body or to treat the body as a natural entity with an originary status (McNay 1996:34; see also Cheah 1996). In an influential book, 'bodies that matter', Judith Butler (1993:9-10) reasserts this sentiment by arguing that the body is a performative entity rather than an inscribed surface:

> what I would propose in place of these conceptions of construction is a return to the notion of matter, not as a site or surface, but as *a process of materialization that stabilizes over time to produce the effect of boundary, fixity, and surface we call matter*... crucially, then, construction is neither a single act nor a causal process initiated by a subject and culminating in a set of fixed effects. [Construction] is itself a temporal process (emphasis in original).

On the one hand, Butler's (1993) work, and emphasis on materialization therein, is suggestive of how cattle bodies might be seen as more than scientific objects in having a material residue that resists their incorporation into a scientific schema. On the other hand, Butler (1993) has a tendency to focus on discourse rather than matter and to defer into 'endless regress' - the 'performing body' that is bounded and only able to multiply its boundedness (see also Barad 1998; Castree 2003c; Cheah 1996).

The second bodily modality that I am sketching, '*relational body*', attempts to find a way out of this divide between the representational and material. This diverse and divergent corpus of literature is calling into question the integrity of the human body by imaging a world-in-the-making in which bodies are continuously composed, dissolved and recomposed amid practices of everyday life (see parts 2.2 and 2.5; Anderson 2002; Braun 2004b:271; Hayles 1999). This turn to relations leads me to the work of Thrift (part 2.5) and his ideas surrounding 'being-in-becoming' where there is no watertight categorization or purity to be investigated, only capacities for connection (or becoming). This:

> emphasizes the flow of practice in everyday life as embodied, as caught up with and committed to the creation of affect... sees everyday life as chiefly concerned with the on-going creation of effects through encounters and the kind of linguistic interplay that comes from this creation, rather than with consciously planned codings and symbols... notions of the direct perceptions of the unfolding of action-in-context (Thrift and Dewsbury 2000:415).

The call here is to think of the body in an immanent sense. For example, by attending to how embodied practices (farming: breeding, feeding, milking) transform the (human) sense of self and notion of the world and the animals that make it up if only momentarily by imagining-feeling rather than making sense of the animal (Baker 2000; Game 2001; McCormack 2004).

The third and final approach, '*emotional body*', seeks to excavate between each of these bodily modalities. Here I sketch the fleshy bodies of individual animals (Thrift 2004d), their personal qualities, expressions, emotions and feelings (Doyle 1998). On the one hand, this implies a phenomenological reflection on the body (see part 2.4) in revealing how I (as a human) am not separated from the world of (animal) others but rather inhabit a mode of 'being-to-the-world' where I might apprehend cattle modes of being in the world (after Anderson 2003:424 see also Leder 1990:163; Williams and Bendelow 1998:154). On the other hand, acknowledging the difference between human and animal bodies leads one to adopt an interactional perspective towards embodied practices:

> The expressiveness of the individual (and therefore his capacity to give impressions) appears to involve two radically different kinds of sign activity: the expression that he *gives*, and the expression that he *gives off* (Goffman 1971:2)

Goffman's (1971) approach is suggestive of how an individual may intentionally and consciously express his or her self in a particular way. Consider for a moment Violet (refer to part 3.22) blocking the entrance to the parlour, not fitting in with the milking routine and attempting to exert some control of that routine (by not responding to nudges or calling and the (animal and human) frustrations that play-out as she stands firm). Consider too how there is a haunting and invisible quality to the impressions that cattle impart (after Katz 1999), cattle will always remain something of a mystery in 'holding back' from others (why did Violet refuse to enter the parlour?). Moreover, how do individual animals cope with the expectations of Martin (the farmer), the herd and others, and consequently the roles that they are ascribed?[29]

Drawing these *figurative*, *relational* and *emotional* bodies together, then, I want to suggest that they form performative layers that one might chose to pursue. Each of these modalities differ as they place an emphasis on the integrity of being (figurative body), the value of becoming (relational body) and an expressive and wilful way of doing things (emotional body), and overlap through a realization that bodies 'speak' (Thrift 2000a). The challenge and task that lies ahead is to explore how these three body modalities are present (or absent) in the breeding, milking and feeding narratives that follow.

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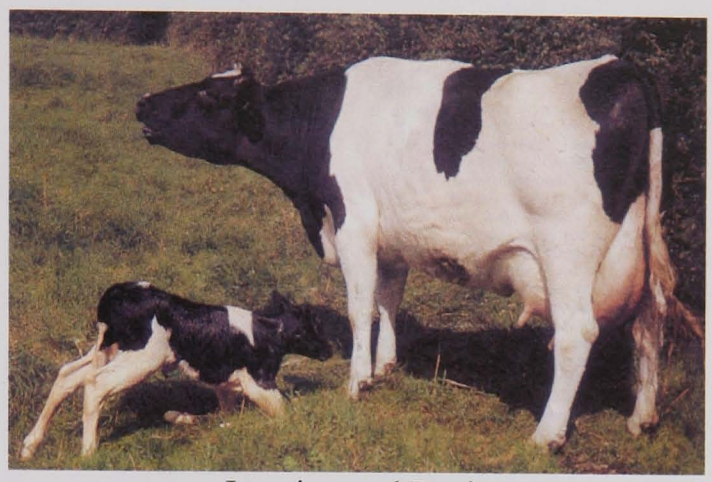
[29] I am all too aware of the baggage that this phenomenological-interactional bent may evoke in the reader. In veterinary literatures, for example, the subjective conscious experience of animals is subject to much debate (see part 1.13; Panskepp 1998; Rollin 1989; Rolls 1999). While sensitive to these arguments, my approach, in contrast, is concerned with recognizing individual cattle as intentional and communicative beings, as narrative subjects guiding and disrupting the stories being recounted through the chapter.

4.1 Reproductive bodies

Moment 1: Life



Jasmine and Rosie

…two legs tied with rope attached to a long metal pole…Martin moving the handle up and down, making a clacking noise.
Rosie makes two long mooing noises.
Jasmine's flopping up and down…she's covered in damp, slimy residue…a film slowly dripping off her.
Martin's shaking Jasmine, rubbing the side of her body with straw… holding her legs and lightly swinging her from side to side.
…
Rosie's licking Jasmine's bottom…her face…turning to the side.
Rosie stops.
Jasmine stumbles towards her, nudging Rosie's face with her bottom, almost doing the splits as she tries to stop and collapses in a heap.
"five minutes old and already on its feet"-Jasmine's sucking Martin's hand vigorously, pushing her tongue forwards and back.

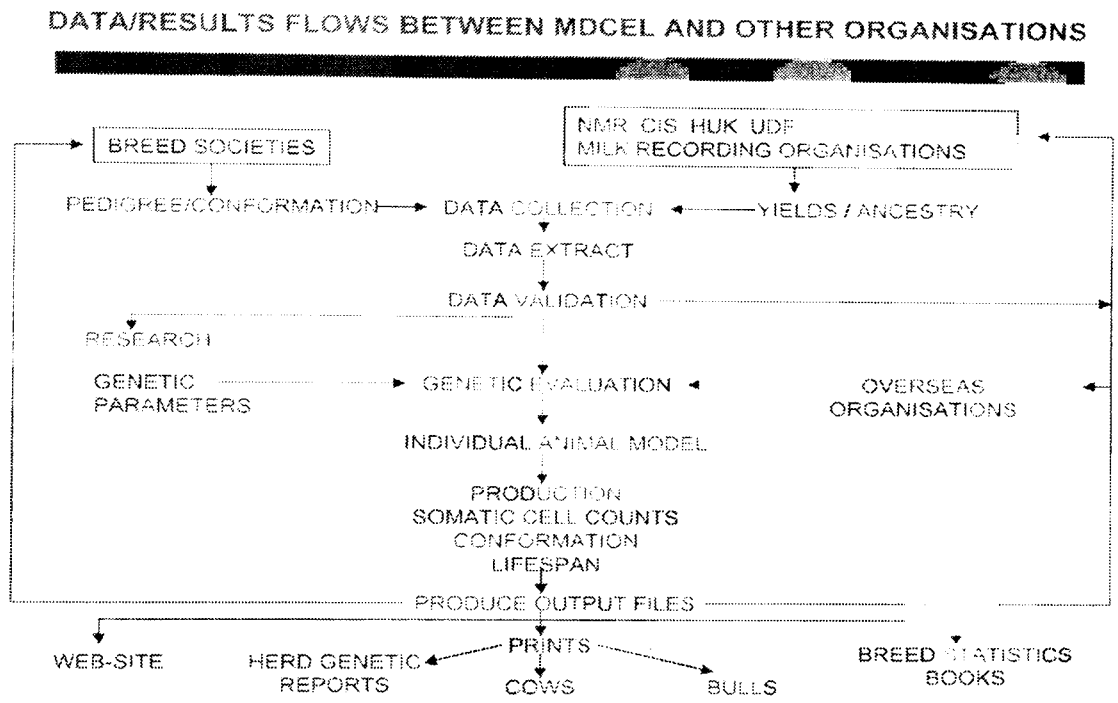
Fieldwork notes, Sunday 7 July 2002.

My first tale begins in the moment recounted above and its culmination, the 'flop', which calls you and I to witness Jasmine's arrival into the world. For more than an hour Martin has been encouraging Rosie to deliver her calf: shouting "come on" and "push" in an aggressive, harsh, and frustrating tone; placing his hands inside her to feel the calf; deciding to tie rope around its legs (jacking sounds). And Rosie has been responding: her eyes whitening and bulging with each contraction, strained moos, a quick and sudden movement (the final push) that sees Jasmine's emergence - 'the flop'- as she literally falls head first into Rosie's front legs, the smell of bodily fluids. Jasmine's stickiness and gasping for breath, Martin moving her with his arms and rubbing her with straw, thick fluid discharging from her mouth and nose, our amazement at the size of Jasmine and collective sense that we have aided her delivery as she exhales after what seems like a lifetime but happens within a matter of seconds.

In this first tale I want to trace some of the instructive discourses and technological assemblages that lead Rosie to give birth to Jasmine. I want to trace Rosie and Jasmine's embodied performance through genes and hormones, conception and pregnancy. Importantly, I also want to keep in mind the sweat, emotion and exhaustion surrounding Jasmine's flop and crucially to question what Rosie and Jasmine may be thinking, feeling, experiencing and intending (after Philo 2005).

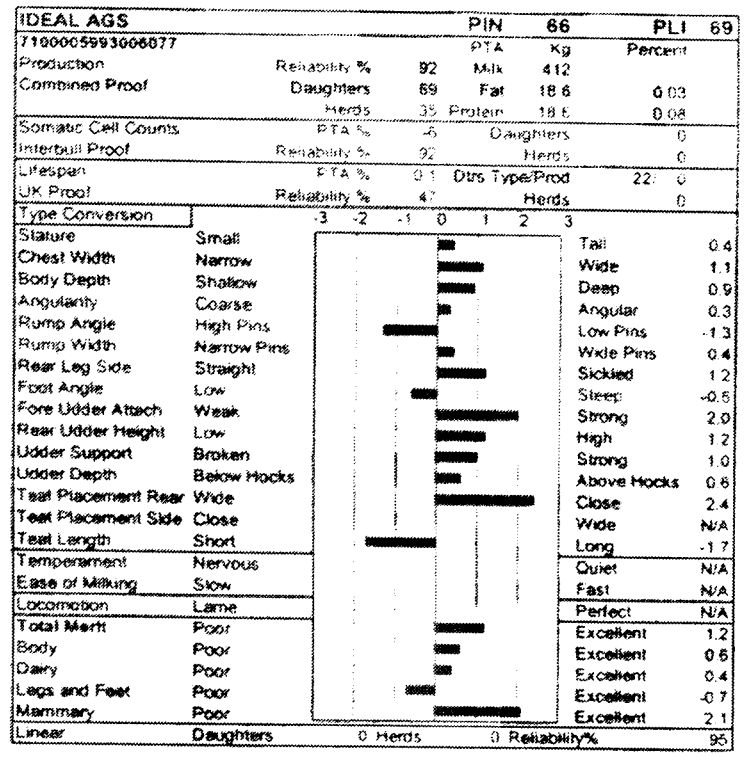
Moment 2: Genes

"The farmer will look at cow x in the herd and know that it's given him 5,000 litres of milk. What he doesn't know is what the true genetic merit of that animal is. I mean 5,000 litres can come if he treats that animal well, if he feeds the animal well, if he's a management dominated figure. The trick, if you like for us, our genetic expertise, is to say out of that 5,000 how much of that is due to management and how much of that is due to the genetics of the animal, the actual breeding".
Gerald, technical team, company M, Wednesday 30 April 2003.



"There's bull information and cow information…milk recording organizations send people out to farms once every month. These people record an afternoon milking of a cow and a morning milking of a cow. This gives them a total amount of milk for a 24 hour period and that total amount of milk eventually, over a period of ten months, you can tell the total amount of milk that cow has produced in a lactation…in this country there are also breed societies…they have allocated schemes to say this cow's of this genetic merit…they collect pedigree information on these registered animals that's verifiable, you know, blood tests, DNA tests and so on…these records are passed on to us so that it adds to the yields and ancestry data…So our net result here is to produce genetic evaluations for production, somatic cell count, conformation and lifespan".
Gerald, technical team, company M, Wednesday 30 April 2003.

Moment 2 continued:



"It's known as a bar chart where you can, if you like, put a chart to the dairy farmer which lists all the traits down the left hand side and then you can see in the form of a bar chart whether the animal is producing towards the tall end of the scale or the small end of the scale [...] on the standardized statistical scale of plus three to minus three that means that bulls that would make a large change are valued between two and three whereas bulls with a breeding value of plus or minus a half or one there will be much less change obviously. Generally speaking if the bars are on the right hand side then it's good but if they're all on the left hand side that wouldn't be good".

...

"We've got to look at how to incorporate such technologies [DNA markers] into our system, to make sure that we evaluate them properly and that's the difficulty at this end...if someone says to us in the future 'look, this family is known to carry this DNA marker' then we'll need to predict that and take account of that when we evaluate it, and that's the tricky part".

Gerald, technical team, company M, Wednesday 30 April 2003.

At first glance the technical details, flow diagram and bar chart presented in this moment seem worlds-apart from Rosie giving birth on Folly Farm. But I want to demonstrate some of the ways in which Rosie's life on Folly Farm and the genetic information being evaluated at this 'data centre' collide, to explicate how Jasmine's conception is a direct result of the information disseminated by company M. For there is an oscillation here between material bodies on farms (Rosie having a sample of milk taken) and the virtual embodiment afforded to Rosie as she becomes a digital figure in computer software packages.

The data centre was founded in 1991 following the publication of a report by the Wilson Committee. This committee, led by Professor Peter Wilson, included representatives from the Milk Marketing

Board, National Cattle Breeders Association, breed societies, agricultural colleges and government departments and was set-up to review existing systems of cattle identification in the U.K. The committee report, published on 1 February 1991, recommended the establishment of a 'cattle data centre' to co-ordinate existing cattle databases; validate cattle ancestry data, milk recording and beef recording; and to genetically assess cattle (BSE inquiry 2000). To implement these recommendations, the data centre introduced an 'animal model genetic evaluation' procedure in September 1992. In essence, computer modelling is used to generate a genetic merit index by calculating 'predicted transmitting abilities' (PTA) of dairy cattle (see Wiggans et al, 1988). Information is collected on a number of bodily traits: milk, fat and protein yields; lifespan; somatic cell count and conformation; and this information is evaluated so that farmers and breeding technicians are able to compare animals and select the best performing cows and bulls from which to breed replacements. In practice, this means that a sample of Rosie's milk is taken each month (at morning and afternoon milking) over the length of a lactation (305 days); her samples processed alongside more than 60 million Holstein lactation records by filtering them through a series of software packages. What emerges from the insertion of 'raw data' and computer software is the production of two economic indices: £PIN and £PLI. These indices are expressed as:

$$£PIN = (Milk\ kg\ PTA \times -0.03) + (Fat\ kg\ PTA \times 1.2) + (Protein\ kg\ PTA \times 3.00)$$

$$£PLI = £PIN + (Lifespan\ PTA \times 28)$$

£PIN is a method of ranking bulls for net margin and £PLI is a financial value generated from combining PTAs for milk, fat and protein yields to predict the additional margin over food and quota costs per lactation that the cow (Rosie) or bull is expected to pass on to its progeny (Jasmine). Taken collectively, what we have here, then, are a series of sophisticated programmes measuring the genetic merit of Rosie and predicting what percentage of that merit Rosie will pass on to Jasmine. Calculating Jasmine's performance is expressed in the following formulae[30]:

$$PTA = W1 \times Pedigree\ index\ (50\%\ sire\ PTA\ and\ 50\%\ dam\ PTA) + W2 \times Lactation\ information + W3 \times Progeny\ information$$

The outcome of these formulae is circulated in a 'herd genetic report' which Martin receives twice a year. Martin uses this information to select high yielding animals from which to breed replacements, finding the average £PIN and £PLI scores of the cows that he has selected. To ensure that future generations improve, the bulls that Martin selects must have an average £PIN and £PLI above that

[30] Please note: 'W' represents the weight and emphasis given to each set of information.

of his cows. For example, focusing on the information displayed in the bar chart in moment 2, a bull name 'ideal', if Martin were to breed this bull with Rosie he needs to ensure that Rosie's £PIN and £PLI are lower than 66 and 69. Following on, the chart predicts that Ideal would pass on 206 kg milk and 9.3 kg of fat and protein to any progeny and the negative value attached to his somatic cell count (-6) indicates that he may reduce incidence of Mastitis[31]. Martin will then check the 'linear conformation traits' (udders, legs and feet) and management traits, (temperament, locomotion), where recorded. Company M state, however, that these records are subject to alteration, thus the reliability of information in the bar chart is presented as a series of percentages: production information (92%), somatic cell counts (92%), and type traits (95%). As a guide, company M suggest that 95-99% accuracy levels are desirable and that a farmer or technician could be confident at this level that the PTA scores would be passed on. For Ideal these values, his proof, are lower as extensive information on his progeny is not yet available.

"It's a heifer... have you seen the size of it... it's a big calf... it's a good calf but not worth a lot, it has to be a really high quality calf to make any decent money"
Martin, dairy farmer at Folly Farm, Sunday 7 July 2002.

Within the first five minutes of life Jasmine's fate is sealed, she will not make Martin a profit; surprisingly Jasmine is not the 'milker' that Martin anticipates and he decides to sell her at a special calf market. I want to use this disclosure to outline three ways in which the material (Rosie at Folly Farm) and virtual (Rosie and Ideal's £PIN and £PLI scores) bodies emerging in this moment are subject to residual performances. Firstly, Jasmine's arrival points towards the need to take reliability percentages seriously. For although Ideal appears 'fixed' and 'static' in this bar chart, bull and cow bodies perform in unforeseen ways. In this sense, production, lifespan and conformation traits are best seen as estimates or guesses, subject to adjustments when the figures are republished every four months. For example, the data sets generate error reports if bodies (individual cows or entire herds) disappear or are replicated; farmers and technicians must be careful to avoid inbreeding and genetic defects (mating sire and daughter, half-brother with half-sister). Secondly, and following on, the type of information collected by company M is subject to change. For example, the list of conformation traits is under constant review and varies according to species of cattle. Future traits that may be measured include overall condition of udder and ease of calving. Moreover, the integrity of the data is being challenged with the advance of reproductive technologies - signalled by Gerald's concern about how to incorporate DNA markers into the modelling software (moment 2). Thirdly and finally, there is an international dimension to genetic evaluation as breeding programmes now select

[31] Somatic cell counts (SCC) are recorded as a possible indicator of udder health and incidence of Mastitis (Mrode et al, 1998). Scientific work continues to explore how to combine somatic cell count data with heritability, and the relationship between milk yields and incidence of Mastitis (see Hansen 2000; Lund et al, 1999; Rupp and Boichard 1999).

from a worldwide gene pool. Four times a year the data centre in the U.K, and in twenty-four other countries, send bull information (Ideal's genetic profile in moment 2) to the INTERBULL centre in Sweden[32]. The centre merges this data to produce an international ranking of bulls which have been progeny tested in different countries:

> ... that means that the dairy farmers here have access to information on the same scale as we publish here [in the United Kingdom]. They [farmers, technicians] can look at bulls from Australia, Canada, America... and if they wish to use semen from those bulls they can arrange it through a semen selling company
> (Gerald, technical team, company M, Wednesday 30 April 2003).

[32] INTERBULL was set up in 1983 by the International Committee for Animal Recording (ICAR), The European Association for Animal Production (EAAP) and International Dairy Foundation (IDF) to provide cattle breeders with accurate comparisons between animals performing within and across countries (see INTERBULL 2005).

Moment 3: Conception

…trying to prepare for an interview… it's too early and I find myself flicking through scientific articles 'cloned cattle can be healthy and normal'- in a mere two pages the paper documents how the temperature, pulse, respiration rate, social interaction, behaviour and urine of cloned animals (24 Holstein cattle) is within normal ranges for adult bovines….other articles debate the application of 'genome maps' and DNA-based tests so as to identify animals with favourable genes for meat, milk; improving statistical techniques for analyzing huge amounts of data; developing scanning equipment to measure leanness without harming animals.

…10.00, returning to the blurb I discover that company Y is one of the worlds largest cattle breeding businesses selling 8 million doses of bull semen from as little as £4 in 63 countries. Moreover, the company is contributing £7 million a year to research and development including a £1.6 million investment in semen sexing. In the U.K alone company Y has a 56% share of the market and each of its technicians inseminates 4,000 cows per year, all year round. Furthermore, as part of an attempt to breed 'long life cows' the company tests 350 bulls worldwide annually and has over 2,000 bulls awaiting proofs.

…

Entering the semen storage area wearing white wellies and lab coat. There are eight steel refrigerators filling the room. Each fridge resembles a silver cauldron and contains coloured straws of semen being stored at -196 degrees in liquid nitrogen…semen is transported to the farm in canisters, these resemble white thermos flasks and may contain 20-30 straws or more…The insemination 'kit': a 'gun' – appearing like an injection, a long and thin barrel, plunging and locking ring; a sheath to prevent uterus contamination, disposable gloves and lubricant.

Visit to breeding company 10, Wednesday 7 May 2003.

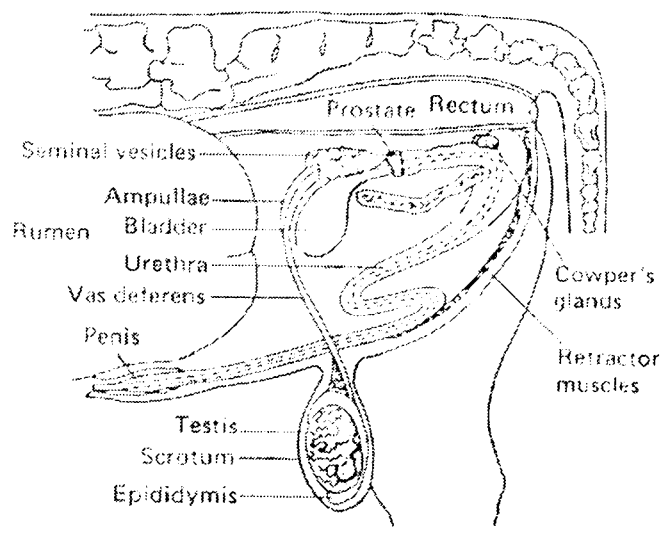
…

"We've also just launched something called [name of product]…which is basically putting three different spoils into one straw of semen, basically mixing three bulls together…and the reason for that is that it increases the conception rate of that insemination by about 9%…all bulls have different capacitation rates…the sperm swims up and attaches itself to the ovaduct wall and then it goes through a lot of changes at that point. A lot of it is still unknown but it is going through a change that makes it, once it's released from the wall, able to fertilize an egg. Now, to the point that the tails are changed, either up or down, it doesn't swim freely, more thrashes around on the spot so when it meets the egg it's not bouncing off, but there is a physiological change that allows them to go on and fertilize the egg. All bulls capacitate at a different rate so if you put three different bulls in a straw with three different capacitation rates then you basically open up the window when the sperm is able to fertilize the egg.

Christopher, fertility expert, breeding company Y, Monday 7 April 2003.

In this moment, Ideal's genetic profile and decorporealization in the form of a bar chart (moment 2) face further biological scrutiny. On the one hand, his semen and sperm become a bodily commodity, a coloured straw sold for £18-20 in the global marketplace. On the other hand, amid these transactions Ideal becomes a material body in place, living out his life in a breeding facility. In this section I want to outline scientific understandings of bull and cow reproductive organs to demonstrate how these are drawn upon to manipulate Ideal's body into producing sperm and Rosie's body into releasing ova.

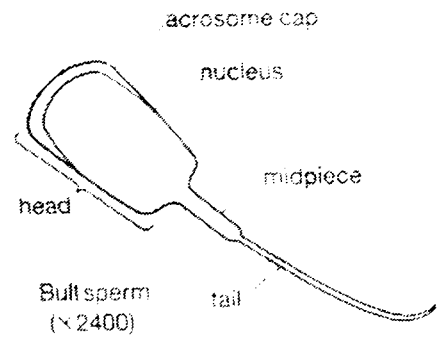
Figure 4.4: The reproductive organs of a bull



(Britt et al, 1986:2196)

Ideal's reproductive system consists of the testes, epididymis, vas deferens and penis (figure 4.4). Sperm is produced in his testes and stored in the epididymis where they mature. Once mature, the vas deferens transport his sperm to the penis, his sex glands (cowper's gland, seminal vesicles and prostate gland) adding chemicals to his sperm to produce semen (Barnes 1995). Spermatogenesis (sperm production) occurs in the testis. Each testis is made up of seminiferous tubules which have convoluted walls consisting of primordial germ cells and serioli cells. The primordial germ cells divide by mitosis to produce identical spermatogonia cells that grow and divide into spermatocytes. Each spermatocyte produces four spermatids that contain half the number of chromosomes found in the nucleus of the original germ cell. Once this duplication is complete the sertoli cells provide nutrients for the spermatids so that they are able to mature into spermatozoa (Campbell and Lasley 1985), eventually growing so that head, mid piece and tale can be characterized (figure 4.5).

Figure 4.5: Structure of bull sperm



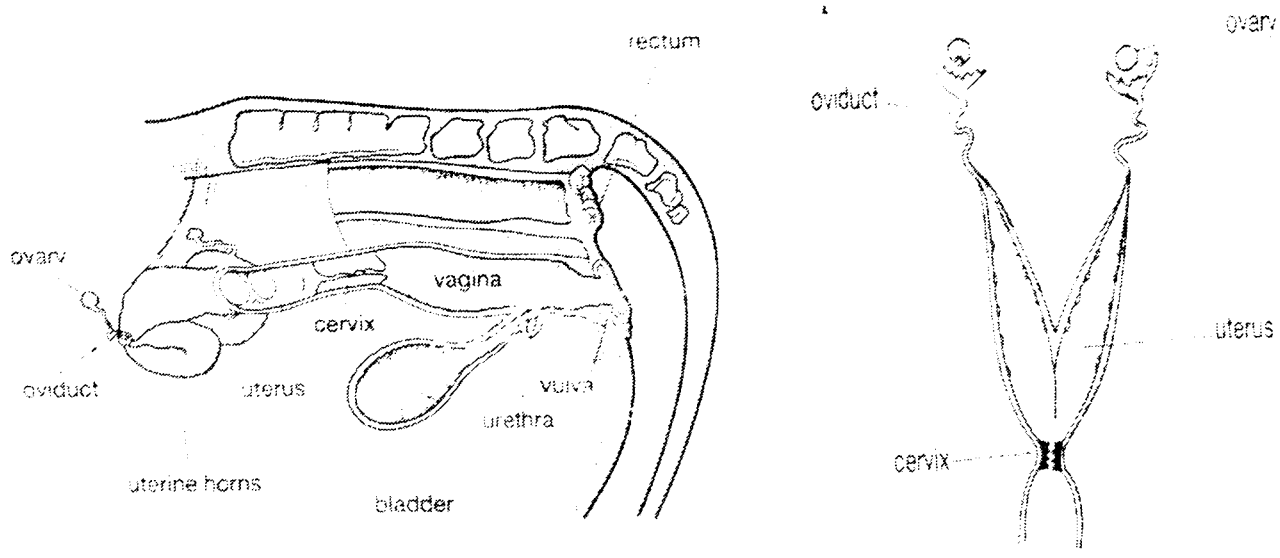
(Barnes 1995:32)

After the spermatozoa reach maturity they are released into the lumen. Spermatogenesis is produced by the 'follicle stimulating hormone' (FSH) which is located in the pituitary gland of Ideal's brain and this produces a second hormone, interstitial cell stimulating hormone (ICSH), that causes cells in his testes to produce testosterone, the male sex hormone (Britt et al, 1986). My intention in describing how Ideal's reproductive system functions is to indicate how the sperm that he is producing and releasing is manipulated. In the first instance this control, by the breeding company, is exerted as Ideal is stimulated by electrical charges or the use of a 'dummy' cow so that he will produce semen. In the second instance, and during ejaculation, sperm is discharged (from the seminiferous tubules in the testis, through the epididymis, urethra and penis) and collected using an artificial vagina. This is a long, rigid container lined with a thin rubber layer, warm water is passed between these two layers and causes the rubber to stretch, the pressure mimicking that exerted by the walls of the vagina on the penis during intercourse. 2-10ml of semen is collected from Ideal containing 2000 million sperm and placed in a glass collection tube (Boothby 2001)[33]. The third moment documents what happens once this process is complete and the sperm has been collected: dividing the genetic material into coloured straws, storing it in liquid nitrogen, placing it in refrigerators, marketing and taking straws onto farms. The thawing of straws and insemination of cows means that Ideal's performance, the quality of his semen and success of his sperm, is under constant review and evaluation:

> Bulls in the stud... proven bulls [including bulls marketed in the North America] I'm guessing probably thirty, forty, fifty bulls that we're marketing at the moment. There's a lot of young sires, these are bulls that have not yet got the proof, but we've got a cow ready to calve, they're just waiting... and there's a success rate of one in ten every time we're testing them [..] the more times we inseminate an animal the more we know that that bull's not as fertile as other animals
> (Christopher, fertility expert, breeding company Y, Monday 7 April 2003).

[33] Please note: in cattle 0.3-1.5 million sperm are needed to fertilize one egg (after Boothby 2001).

Figure 4.6: The reproductive organs of the cow



(Barnes 1995:34)

She's not herself... she sometimes mounts Margaret or Melissa... wont settle at milking - moving not standing still... messing around, not eating;

For Martin, Rosie's lack of appetite and restlessness is a sign that she may be in 'heat', a sixteen hour period when, if mated with a bull or artificially inseminated, she is most likely to conceive (Britt et al, 1986). Rosie was born with eggs or ova that remained in a dormant state in her ovaries until ten months of age when she reached puberty[34]. The ovary is surrounded by an epithelium and contains primordial germ cells. These cells divide to produce oogonia which become surrounded by follicle cells and are stored until puberty. With the onset of puberty Rosie's oocytes began to develop and ova produced at regular intervals in a cyclic manner (Peters and Ball 1996). This cycle, known as oestrus (see figure 1.2), lasts twenty one days and begins with a period of estrus (heat). To conceive, sperm enters the vagina and moves through the cervix and uterus where it will meet the ovum (figure 4.6). Here, the sperm release substances that help breakdown the surface of the ovum, enabling it to fuse with the nucleus. After this process of fertilization is complete, the ovum will float freely inside the uterus for 35 days before it implants in the wall of the uterus, 283 days later Rosie's calf (Jasmine) will be born (Barnes 1995).

A n arm inside me, plunging forwards, fingers moving and touching, penetrating, tearing, bleeding...

Jasmine's flop is not the result of Rosie having sexual intercourse with a bull, but evolves from artificial insemination (technique outlined in part 1.11). Martin has purchased semen from a

[34] Puberty in domestic cattle takes place between eight and seventeen months of age (Roy 1980).

breeding company; a technician has arrived with the straw, thawed and placed in a pipette. The technician inserts his hand into Rosie's rectum, entering her cervix, but in so doing disturbing the delicate lining of her uterus - a small trickle of blood is discharged. Using a paper towel the technician wipes away the blood and puts his hand inside Rosie again, positioning the cervix to receive the pipette by pushing it up slightly, the liquid (semen) entering Rosie. The success of this procedure is determined by the technicians skills, understanding the bull and cow reproductive organs (sperm and egg) so that semen can be extracted from Ideal and Rosie in heat recognized, and all of these acts ultimately framed according to quantitative measures that predict production traits that Jasmine is likely to inherit from her parents (moment 2). Jasmine's flop as she greets the world is a culmination of these biological understandings.

Amid these reproductive knowledges, there are a series of uncertainties. I am thinking here of how it takes two insemination attempts for Rosie to conceive Jasmine, how Martin finds heat difficult to recognize in some of the cows on Folly Farm, and how Ideal's proof is subject to alteration as more data on his offspring becomes available. To address these uncertainties, biotechnological transformations of cattle reproductive organs and systems are continuing. Developments include: putting sperm from three bulls into one straw (moment 3); semen-sexing technologies; embryo biopsy, bisection and/or cryopreservation; oestrus cycle synchronisation; laparoscopic follicular aspiration and establishing abattoir ovary banks (see Farber and Medrano 2003). Such technological innovations herald important ethical and practical shifts in the corporeal lives and places of cattle. I want to end this tale by making several preliminary remarks about what the empirical moments presented might mean for Rosie, Jasmine and Ideal. In so doing I want to return to the 'flop' and describe what happens next:

Rosie's licking Jasmine's back...Jasmine almost standing, trying to get her balance, her two front legs remaining further apart than her back legs... a few seconds pass...then Jasmine lifts her front right foot, then her left, but suddenly slips and slumps in the straw. Rosie's head coming down, she nudges Jasmine's back and moos.

Fieldwork notes, Sunday 7 July 2002.

...

Two separate pens, Rosie pressed against a metal gate standing on concrete, Jasmine stood in the middle of her pen, partially covered in soft straw.
Rosie moos... Jasmine moves towards the metal gate of her pen, her head and neck small enough so that she reaches through the supporting post...
Rosie attempts to respond but only reaches the metal bars of Jasmine's pen
Jasmine nudges further forward,
Rosie and Jasmine's noses embrace.
Jasmine pulls away and Rosie moos, her bellows becoming louder and louder, lifting her back right leg up and down, up and down,
Rosie's bellows becoming so strong that her back and stomach vibrate as she inhales and exhales the sounds.

Fieldwork notes, Thursday 11 July 2002.

In this tale what begins to emerge is a sense of the ways in which Rosie, Jasmine (and Ideal) are caught up with milk recording organizations, breed societies, breeding companies, laboratories, animal data centres; and with computer software, economic indices, straws and insemination guns. But what these fieldwork notes further signal is how this reach is "no less intimate or immediate for the physical distance involved" (Whatmore 1997:49), and it is here amid these complex assemblages that Rosie and Jasmine's corporeal lives and future are determined. These assemblages provide opportunities for one to explore how the genetic value of cattle is negotiated: striving to mate an 'ideal cow' (ova) with a 'perfect bull' (sperm) in terms of aesthetics (external bodily dimensions), production (£PIN) and longevity (£PLI). This realization is bolstered by scientific credentials developing genetic products, and institutionally framed through technical specifications and assessments. But Jasmine also serves as a reminder and warning of complacency, for all the scrutiny paid to bar charts and economic indices Martin's face drops as Jasmine falls to the floor, and within a few minutes of birth he decides that she will never make a profit and is destined for the market. Jasmine is not 'genetic progress'.

I am left wondering, then, how individuals within the cattle population become genetically viable[35]:

> At the present time genetic progress in the national herd is improving at the rate of about 2% a year which is very good and...genetics is a very important part of that overall improvement
> (Gerald, technical team, company M, Wednesday 30 April 2003).

[35] For a discussion on the evolving goals and methods of farm animal breeding see Boettcher (2001) and Gamborg and Sandoe (2005).

It is on Folly Farm that this improvement becomes realized in practical terms. Martin (and the breeding company that advise him) makes a series of decisions in selecting bulls and cows to breed replacement animals: should Martin breed cows according to their overall genetic merit (£PIN and £PLI scores) or improve specific production traits (legs and feet, udders) (see also Mrode et al, 2002)? The dairy cows on Folly Farm thus become materialized as numerical specimens on a herd genetic report, and the bulls that Martin would like to mate them with a series of bar charts for comparative purposes (moment 2). Martin is, then, preparing for the day when Rosie will leave the herd by attempting to breed cows that will inherit her genetic make-up (perhaps one could collect Rosie's remaining ova after she is slaughtered and store this material in an ovary bank?)

But it is the fieldwork notes above that point a way through and crucially unsettle these representational systems of signification and validation. These notes conjure up - in a barest sense - animalian ways of being in the world that are all too often forgotten and unwritten. It is here that you and I are called to witness that which slips from view amid the one million cows in the U.K that are annually (artificially) inseminated by company Y: the disregarded aspects of giving birth, the relationship between a cow and calf. To do so raises ethical and political questions about the acceptability of breeding techniques: are Rosie's maternal and reproductive functions being meddled with, exploited perhaps? What is the relationship here between production and welfare (see also part 1.13)? Importantly, I want to ask: what does it mean to take Rosie and Jasmine's corporeal lives; their needs, desires, intuition and emotional well-being into account? I offer two provisional remarks here.

Firstly, I think that it is important to contemplate, nevertheless difficult to know with any degree of certainty, what the impact of these breeding techniques on the *life habits* of cattle might be. With these fieldwork notes in mind I am thinking here of parenting skills. The first minute after Jasmine was born Rosie walked to the back of the pen, her body turned away from Jasmine, Martin and I. It was Martin's encouragement - "come on girl, come over here" - that led her to Jasmine. I cannot help but wonder what made her ignore Jasmine: fatigue or a deep seated memory that Jasmine would be taken away from her? Over a four day period Rosie and Jasmine 'bonded': Rosie supporting Jasmine in her attempts to walk and licking slime off her body; Jasmine nudging, grunting and copying Rosie. And yet four days later these licks and nudges become but a bodily memory as they are separated. What might it feel like to have your calf taken away from you - Jasmine no longer sucking from your teats, following you? And what might Jasmine's reaction to the milk replacement powder be, to drinking from a bowl? These notes begin to move one towards apprehending the physical and psychologically deprived lives of Rosie and Jasmine - the will to touch, distressing calls and repetitive movement of feet. Beyond Folly Farm these moments raise more fundamental questions about kinship and identity: what is the relationship between ancestry,

biological heritage and individual animal identities? How are issues of bodily relatedness and constraints being negotiated between cows, bulls and their offspring? What are the implications of 'genetic laboratories' (measuring the capacitation rates of sperm in moment 3, or growing ova in a test tube)? Importantly, how might cattle exert their agencies in responding to such innovations?[36]

Secondly, I am left wondering how breeding practices are altering the *bodily behaviour* of cattle. On the one hand Jasmine spends a few short days with her mother, but she and Rosie never spend time with the bull that assisted with his sperm. Rosie is unlikely to experience 'natural service' (sexual intercourse) and the sensation of a bull's penis. On the other hand, Ideal is unlikely to experience what it is like to be in a field with a herd of cows, using his senses to discover which, if any, of the cows are in estrus; pursuing cows, entering their bodies. Rather, any sexual arousal that Ideal experiences is stimulated by electric shocks. The closest that he will come to penetrating a cow is seeing a 'dummy', a cow injected with hormones so that she is permanently in estrus, the material gathered through this treatment stored and sold.

After three and a half months Rosie was artificially inseminated again and milked until six weeks before the birth of her next calf. Ideal continues to live out his life at a breeding facility, his semen collected and proof under constant review. Almost eleven months after being sold at a calf auction Jasmine was slaughtered for beef. In the next section of the chapter I want to extend these critical thoughts - in terms of the ongoing cycle of pregnancy and lactation that Rosie (and other cows) are subject to - by charting four moments that envelop a milking session on Folly Farm.

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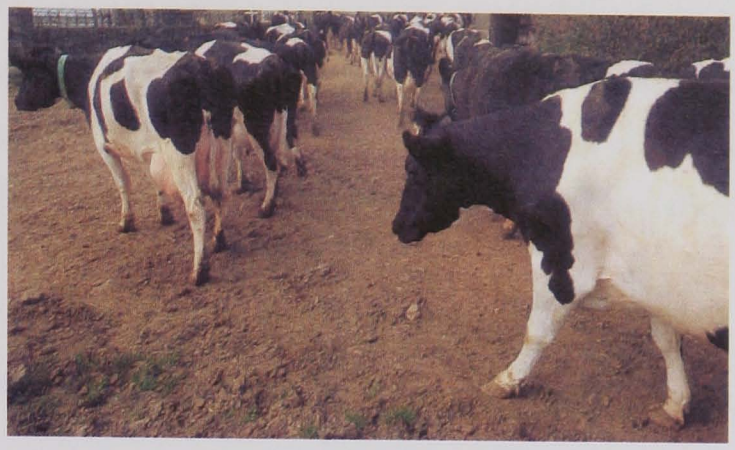
[36] A growing corpus of literature in cultural geography is exploring the ways in which ideas of human relatedness, identity and origins are being imaginatively refigured through genetic discourses of kinship (see Nash 2003 2004).

4.2 Lactating Bodies

Moment 4: Walking



"Come on, heeeeeeeeeey, come on"
Martin's in the middle of the herd whistling - the cows turn the corner.
Slow, deliberate, regularly paced walk, Yazzey stops to look back every five to ten seconds.
"Go on, go on", Martin gives a short, sharp whistle now.
Yazzey twisting her head, each side in turn…purposeful.
1..2..3..4.. walking at a moderate pace, the harmonized movement of legs and sequence of feet.
Muddy knees from the field, tail swinging so violently that it hits her right back.
"Get away, go on then…keep up" - Martin's tone and pitch change to become frustrated, forceful.
He begins to whistle again.
Yazzey continues with her slow pace - stopping every few seconds to see if the cows are following. The gate closes.
Yazzey's udder looking full and swollen, wobbling from side to side - veins visible on the surface of her skin.
…
In a line with five other cows (her group) eating.
Yazzey occasionally swinging her tail - now it's more at ease… a unit attached to her udder and milk pumping up through plastic tubing.
A background hum - the constant sucking noise from the milking equipment.

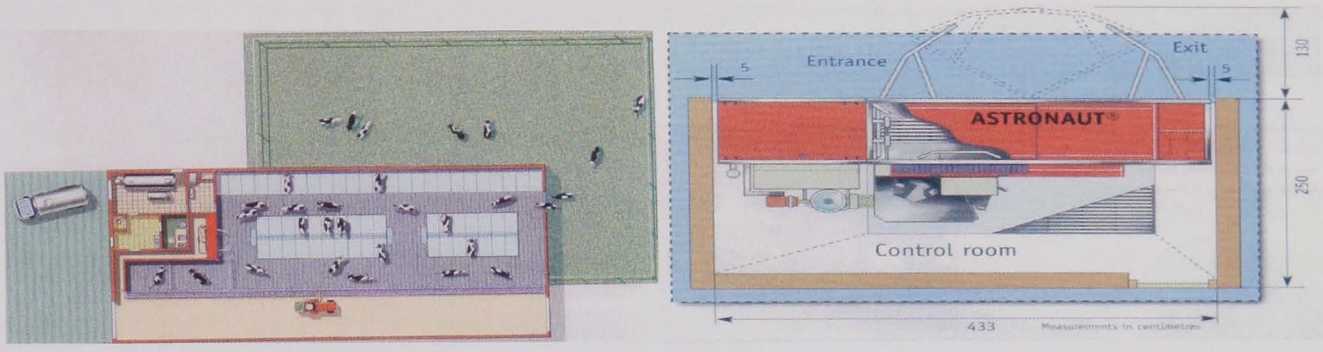
Fieldwork notes, Monday 29 July 2002.

My second tale begins with Yazzey (moment 4). Twice a day (from 5.30-8.00am and 3.45-6.00pm) the herd at Folly Farm journey to the parlour to be milked. Yazzey's life on this dairy farm, her very existence, depend upon her ability to produce milk; but this is not a tale about milk production per se, and nor is it my intention to explore the relationships between food production and human consumption (Bell and Valentine 1997; Lupton 1996; see also part 1.2), for to draw out these lines of enquiry might lead one to think of Yazzey solely in terms of a (milk/dairy) commodity. Instead, I want to employ Yazzey's 'walking' to extrapolate three moments where a transition is made from milk corporealized as the 'stuff of the (cattle) body' to the 'stuff in her (Yazzey's) body' with all the dispositions and bearings that she brings. Firstly, I describe the design and manufacture of robotic milking technology. Amid reassurances that this technology "guarantees maximum free movement

of cows" and lets the "cow decide for herself" when to be milked (equipment company D), how might Yazzey respond to these technological assemblages if a robotic parlour were installed on Folly Farm? The second extrapolation examines the state agencies responsible for inspecting milking premises and enforcing legislation: how does Yazzey fit within and disturb regulatory procedures? The third and final extrapolation probes how a cup attached to plastic tubing in the parlour takes a sample of Yazzey's milk, the quality scrutinized to ensure that it is fit for human consumption. Ultimately, what I am trying to do through these extrapolations is to think about how Yazzey, in her everyday life, might (re)configure the ways in which milk is pumped through and from her body.

Moment 5: Robot

"Mention the word 'cow' and 'robot' in the same sentence and you get an image of this rather intimidating, plonking, angular thing approaching this soft, timid, dairy cow and I suppose part of the concept is how do we get through that. We already have the situation where robots are a reality now. There's probably about three-thousand robots milking cows in the world already…the biggest challenge really is acceptance"



"From the cow's point of view there's a significant benefit, the cow is not expected to stand in the waiting area and that's quite significant because they would spend thirteen hours lying down, ruminating, and about six or seven hours eating. In conventional parlours they're taken away from the housing area and from the point of production it's possible to milk these animals more frequently and, for example, from past experience we know that if you go from twice daily milking to three times it will give a performance improvement of between ten and twenty percent and also the animals are likely to be more healthy"
Joe, product manager, milking machine company C, Monday 12 May 2003.

…

…

Wearing overalls and ear plugs, moving along the factory floor - a vast open, light space with lots of small work stations.
…four white cylinder shaped tubes with red caps, coloured wires, clear tubing - the installation of software - laser guided so that the robot can pinpoint the exact position of a cow's teats.
… a robotic arm, a disjointed u-shape for now - metal, plastic, rubber - more wires strewn out, tiny parts - square and rectangular shaped with holes in waiting to be assembled, black springs to be attached to two sections for flexible movement.
…materials adjoining the robot - a corrugated floor with eight steel strips at the entrance, metal fencing each side, divided into two more sections at each end - closed metal barriers

Factory visit carried out with Joe, Monday 12 May 2003.

…

"It's fair to say with the robotic parlour that it's about getting people on side, understanding that they can't just close the door and clear off, there are still management tasks to do. Whereas once, twice a day, they had physical, visual contact with the cows, instead of that they've got a computer screen and printouts, it's the basis of telling him what needs to be done"
Joe, product manager, milking machine company C, Monday 12 May 2003.

A standard robotic milking system consists of a compressed air system, a computer with printer and management software, a modem, neck collars with x-ponders, valves and connections to the milk tank and control panels. Once installed, and after a two to three day period of adjustment, the cow enters the parlour and is identified by the x-ponder around her neck. The cow then walks into the stall where she stands while her teats are cleaned. Laser guided technology determine the exact position of her teats and a robotic arm attaches cups to her udder. The system has measured the milk flow from each of her teats during a previous visit and a removal time for each cup pre-programmed. The milk is extracted from her body and the cups are removed. The cow's teats are sprayed once more and she now leaves the robot; her milk measured and pumped away. If problems occur during milking an error message is sent to the farmer's pager, mobile phone and the farm office computer. This over simplistic description attends to how cows on over two thousand farms worldwide and thirty farms in the U.K are milked using robotic technology (IceRobotics 2004); the quotes, images and descriptions in Moment 5 outlining some of the organizational and design specifications, and the difficulties pertaining to human and animal responses.

The marketing strategy deployed by the three companies manufacturing, distributing and installing robotic systems in the U.K aim to overcome preconceived notions of the technology as somehow daunting through a series of lucrative concepts. Firstly, robotic technology is presented as an opportunity to optimize farm operations and remain profitable. This equipment can increase productivity (milk yields) by 20% and reduce farm costs (IceRobotics 2004). One milking robot alone is capable of milking seventy cows in two hundred milking visits to the parlour in a twenty-four hour period, leading to the production of 700,000 litres of milk annually (equipment company D).

Secondly, cattle become an important device in increasing farm profitability. Advertising conveys how the technology fits within the 'habitat of the herd', reduces stress levels in the animals, and documents how materials are designed with the welfare of animals in mind:

> We're looking very much at issues relating to cow movement, welfare, the process of milk let-down within the dairy chain and for that matter it's based on a hormonal response and... the whole design environment has got to be about producing a relaxed, easy environment for the cow and quite clearly the equipment is vital to that (Joe, Product Manager, milking machine company C, Monday 12 May 2003).

On the one hand, the concern here is how to integrate the behaviour and biology of cattle into the design specifications through managing a physiological process - 'let down'. To permit the robot to pump milk from a cow's body the hormone oxytocin needs to be released from the animal's pituitary gland into the bloodstream, contracting the alveoli and duct tissues in the udder to force milk into the teat (Barnes 1995:45). If a cow is stressed, anxious or unwell milking is impeded by the

release of adrenalin and nerve impulses are transported around the animal's body thus reducing the effects of oxytocin. The advantage of robotic technology, according to manufacturers, is that it allows individual animals to choose their own routines in deciding when to get milked, graze, eat and lye down. The robotic parlour is attached to the animal housing to provide ease of access and the milking stall itself contains a 'flat and comfortable' floor where the cow is not locked in position and can move forwards and backwards. Furthermore, it has been suggested by manufacturers that the ability of the cow to relieve pressure on her udder, and the cleaning of a cow's udder by a robot, leads to an overall improvement in the animal's health and a decline in mastitis occurrence.

On the other hand, cattle acquire informatic properties as they circulate as virtual bodies in the guise of computer printouts. As a cow enters a robotic parlour it becomes a digitized barcode, scanned in and identified by the system. A series of software tools are then used to generate data on cow behaviour (visiting frequency, movement in the stall, milk yield, milking time and intake of concentrate); a system that alerts the farmer if there is a change in an animal's behaviour, with figures also displaying any deviations in milk yield, colour and quality. This technology-animal interface, both physiologically and virtually, might be seen as part of an attempt to redistribute agency to cattle in providing individual animals with the bodily competency and autonomy to decide for themselves when to be milked.

Thirdly and finally, farmers are presented with a marketing slogan: 'Do you love life? Then do not squander time; for that's the stuff life is made of' (equipment company D). In this way robotic technology is seen to provide the farmer with the flexibility to carry out other tasks on the farm:

> Spending quality time with your cows, observing them and finding better ways of doing things... rather than in the past when your cows were just passing by while you were standing in the middle of the milking pit
> (Charles, research and development team, equipment company D, Thursday 29 May 2003).

In summary, robotic milking technology is publicized as offering 'improved welfare for the farmer and his cows' in combining existing farm resources (cattle) with an automated management system that allows farmers to continuously monitor an individual animal from 'grass to milk' (after equipment company D).

What would happen to leading the herd to be milked, Meg running round barking; the nudges, smells from the other cows, waiting to be milked; not being called, touched and stroked by Martin - him checking that I'm okay; the different textures and surfaces inside, the 'bleep' sound echoing as I am scanned in, the barrier closing behind me as I enter the stall, in front of me another barrier - Margaret and Melissa no longer stood next to me; my teats being sprayed and cups attached by a machine not Martin.

These comments ponder what Yazzey's thought process might be if she were to encounter robotic milking technology first-hand. It is through these fabrications that the redistribution of agency that robotic technologies offer become realigned as, for some individual animal's (Yazzey), any transition to automation becomes fraught and unnerving. In particular, what is potent in making 'real' Yazzey's 'thoughts' is how she is a thoroughly social living being. This sociability is apparent in her relations with other members of the herd. Consider the following instance:

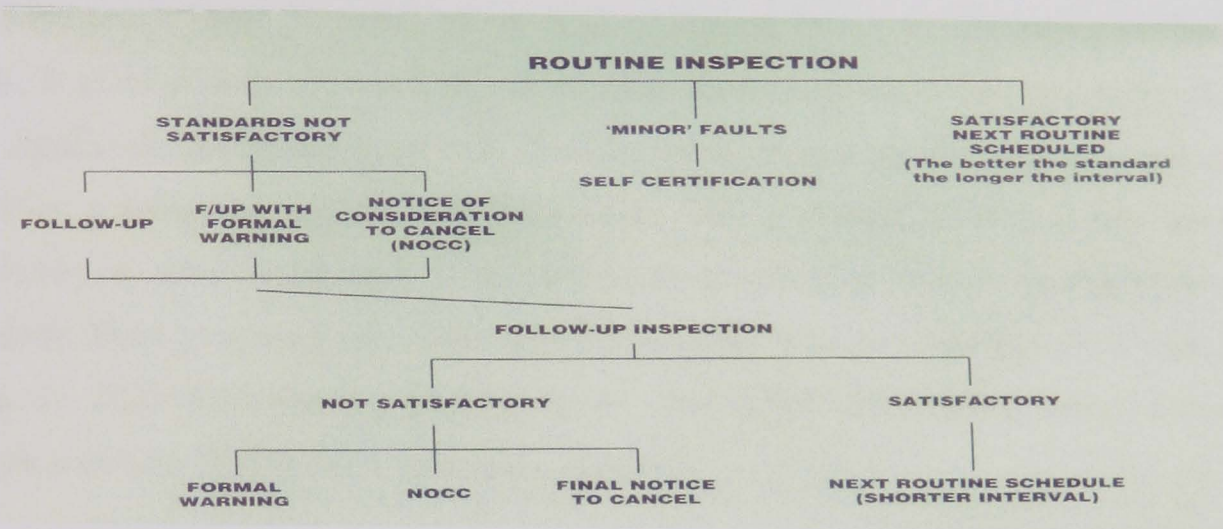
> *I arrive before Martin. Yazzey waiting near to the gate, five other cows stood behind her. Melissa moves abruptly and promptly so that she is now in front of Yazzey. And Yazzey responds - walking slower until she is once again in front, Melissa watching her, Yazzey giving a bellowing moo and continuing as far forwards as she possibly can - touching the gate. A few moments later and Melissa bangs roughly into the side of Yazzey, nudging her - as though she's trying to place her head on top of Yazzey's back, sniffing her bottom, continuing until Martin arrives ten minutes later. Yazzey retaining her position at the gate.*
>
> Fieldwork notes, Monday 29 July 2002: 5.05pm.

Holding on to this position at the gate; leading, pausing and checking that the herd are following, a member of the first group to enter the parlour (see also moment 4); these everyday routine practices and habits are important to Yazzey's way of life as she unexpectedly faces up to the commotion at the gate in responding to Melissa's actions. This sociability extends to her interactions with Martin, as he strokes and talks to her in the parlour, checks her body for signs of ill health, watches her interact with the herd, eat and leave once milking is complete. One is also left with a sense of 'artificiality' in an automated parlour. I am thinking here of how Yazzey's sense of smell alters as she comes into contact with different surfaces (metal, plastic) and is washed by a machine, her hearing (being scanned in, the movement of the robotic arm), no longer having set times to enter or particular stall to stand in; perhaps she now finds herself alone as Martin is no longer required to be there, missing his shouting, whistling and singing. What I am trying to convey here is not that robotic milking technology is somehow inadequate, but rather to draw attention to how aspects of Yazzey's corporeality are forgotten and erased in the design and installation of this equipment. Crucially, to contemplate how Yazzey acquires a deprived repertoire of corporeality (bodily presence), sociability and movement (after Whatmore and Thorne 2000).

Moment 6: Inspection

"The sole purpose of our job is to check the hygiene of milk for public health reasons…Every dairy producer in the U.K is registered and licensed to sell milk. The condition of that licence is that they've got to keep the premises clean and tidy and fit for milk. And they're liable to routine, unannounced and no appointment inspections from us, which can be at milking times, we check up on milking practices…um…so yeh, if they don't pass then we'll go back"
Joseph, dairy hygiene team, Wednesday 11 June 2003.

…



…

The sheet from the central database lists who's due a visit. Joseph has already called up the farmer's file and checked it through before we leave - past reports and letters detailing problems. We're visiting a 'medium risk' farm, last inspected eighteen months ago.
Being taken to the parlour, checking there are no cows outside, the structure of the building - no holes in the roof, a door - it's not hanging off…no sign of decay, mould or vegetation invasion.
Inside the parlour - smelling, then physically checking it's clean - no dung, nothing loose, no equipment strewn around, no glass, no flammables or old medicines present, no sign of vermin or birds, smooth and pervious walls - "the wood over there needs to be clean" Joseph points out. Everything seems okay so he asks the farmer about his practices - how does he clean the cows and the parlour at the end of milking…Joseph nodding his head, agreeing with the explanations.
Off to the field to check the animals as the premises haven't been inspected during milking time. There are three cows near to the gate; we enter with the farmer and Joseph walks up to one of them, placing his arm on her back, using it to balance as he bends down to look at her udder and the surrounding area.
"It looks fine"

Farm visit carried out with Joseph, Wednesday 18 June 2003.

…

"If we do see proper neglect of animals, veterinary, we report it to state vets. There was a case three weeks ago, a colleague went to see a goat producer and there was a pile of dead male kids in the parlour with their eyes poked out by crows just rotting…because it's very unannounced you see animals without sufficient bedding, not being fed…there was a case a few years ago of dead cows in with milking cows, an atrocious structure, he was prosecuted" (Joseph, Wednesday 11 June 2003).

…

Joseph's been filling out a tick sheet as he tours the parlour, he now adds up the score for the 'milking area, equipment, animals and housing' to give the farmer a total out of 130. Just under one hundred - puts him in the medium-low risk. Although Joseph finds no faults with the equipment inside, the chemicals that the farmer is using to clean the parlour or the condition of the animals, the building itself is getting old, parts are deteriorating - the door frame, a few loose tiles on the roof - and these could become a problem in the future if not attended to.

Farm visit carried out with Joseph, Wednesday 18 June 2003.

All holdings selling milk for human consumption, including Folly Farm, have to be registered with the Food Standards Agency (FSA). The organization that employs Joseph is responsible for inspecting dairy farms on behalf of the FSA, checking for compliance with the 'Dairy Hygiene Product (Hygiene) Regulations 1995'. These regulations are designed to protect the nation's raw milk supply from the risk of contamination by bacteria and other substances by maintaining a satisfactory standard of hygiene on farms. To ensure that the act is complied with, and the standard of hygiene sufficient, inspectors visit more than 16,000 milking premises annually in England and Wales. The average interval between routine inspections is approximately 21 months (2002-2003) but this frequency varies according to the level of hygiene found on each registered holding. For example, if an initial inspection reveals one or more contraventions of the regulations which could lead to significant contamination of milk, or where infringements are the same as found at previous inspections, a follow-up inspection will be made. This is normally within a few weeks and is supported by an enforcement letter. If improvements are not made within a specified period of time this warning letter progresses to a 'final cancellation notice' that prevents the sale of milk from that holding. In 2002-2003 the inspectorate issued over 3,000 enforcement letters including 175 cancellation notices (Inspectorate guidelines, undated).

To ensure that holdings meet the terms of the hygiene regulations Joseph fills in a tick sheet during every inspection (moment 6). This form covers the structure of buildings; parlour hygiene; dairy hygiene; milking equipment hygiene and maintenance; cow cleanliness; milking practice and veterinary supervision. Regarding 'cow cleanliness', the guidelines detail how the build up of dung on udders, bellies, flanks and tails is not acceptable; stipulate that teats and udders must be free from soiling before attaching clusters; and that cows grazing access tracks and field entrances should not be allowed to get so muddy that gross soiling of legs and udders occurs. However, the interpretation of these rules on milking premises can be inconsistent:

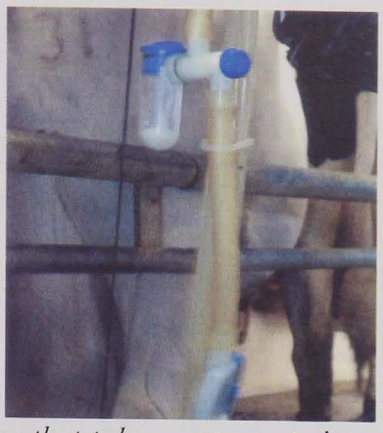
> What people do at milking time has hinged on the late 70s and 80s when people were discouraged from using cloths to wipe cows teats because it was thought you were spreading Mastitis. While drugs have improved so you can control Mastitis, it's a vicious circle for those people because they insist on not wiping the cow teats or they only dry wipe as they see water as a medium for transmitting and spreading bacteria
> (Joseph, dairy hygiene team, Wednesday 11 June 2003).

Cattle emerge as one aspect of an inspection process in which Joseph's overriding concern is with public health (moment 6) and protecting the clean and wholesome image of milk:

> [The Inspectorate] has a public safety role because milk is potentially a high risk product, full of nutrients, bacteria and we don't expect it to be sterile but basic methods and practices [in milking premises] have to avoid contamination
> (Joseph, dairy hygiene team, Wednesday 11 June 2003).

Joseph's inspection focuses on the environment in which the milk is extracted from cattle bodies and he asks questions about farm practices (how milk is taken from the animal) and looks at the chemicals used to clean parlour and animals. Joseph takes fewer than five minutes to walk to the field and look at the animals, concentrating on the udder and hock areas of the animals next to the gate. Importantly, for me, this signals a need to move beyond the totalization of thought that sees Yazzey become wrapped up in legislative infrastructure, her corporeality viewed in a fluid sense (milk) as her appearance (the exteriority of her body) is checked for cleanliness. On the one hand, Yazzey's 'muddy knees' walking from the field to the parlour (moment 4) become intimately connected to human health amid anxieties associated with drinking milk and dietary knowledges, methods of food production and shopping trolleys (Bell and Valentine 1997; Cook et al, 1998; Enticott 2003; Goodman 1999; Probyn 2000; Stassart and Whatmore 2003; Whatmore et al, 2003). On the other hand, this leads me to query how the immaterial and absent role that Yazzey is afforded in this 'farm to glass' approach might be reconfigured if one takes her embodied presence seriously. This is a call to rethink Yazzey's corporeal relations with Martin, Joseph and human consumers. What I find compelling in beginning to unravel these relations are the connections between animal well-being (Yazzey) and human health as inspection practices do, but not overtly, invest dairy farmers (Martin) with responsibility for taking proper care of the animals on his (or her) farm. I am thinking here of Martin's duty to clean Yazzey's knees, check her body for illness and injury, and provide her with adequate feed and bedding, and how all of these things are vital to her bodily abilities to generate milk.

Moment 7: Cup



Flicking through the document…a device that takes a representative sample of milk quickly and easily. Robin turning pages - 'design', '3D modelling', 'rapid prototyping', 'milking trials', a 'gantt chart' detailing key tasks and completion dates, 'final review', sign-off, the shop floor.

…

In the mould workshop with Kevin…a machine almost spanning across the entire room, tooling - transporting cavities and setting cores…loading a funnel with white plastic balls then the 2% colour needed - blue. Starting the machine, it makes a sharp thud and then the balls get sucked in, down the funnel. I see them again a few moments later as they drop in front of the 'screw' and push it back - Kevin calls this a 'shot' and the shot is listed on a small computer screen near to the funnel - yellowy-orange writing with date, time, quantity and lots of numbers displayed…once the cycle is complete Kevin informs me that the mould has to dry off for four hours.

…

In the product assembly warehouse with Mary. On the 'can bin' system - there's a bench in front of us where the 'filler' has placed components of the sampler into blue containers. The body - a clear Perspex tube, a cap and plug, operating instructions. I time Mary - it takes her 3.5 minutes exactly to move along the bench, collect parts and assemble them into a box at the end. From here the box is collected and placed on one of the shelves to our left ready for market - the shelves empty as the company operate a 'rapid throughput system'. Working on the line amid the continual da-dum da-dum, like a ticking clock, as fifty-five jet streams are put 'on test' for forty-five minutes in the laboratory behind us

Visit to equipment company A, Tuesday 18 March 2003.

…

"This company, and it's not just words, what we produce is for the health of the animal and we're not just saying that you know, we really believe that's what we're trying to do and you're not playing around with something trivial here…you can't afford to get it wrong. 'A healthy herd, a healthy profit' that's our strap line"

Aled, research and development team, equipment company A, Monday 17 March 2003.

This final moment oscillates somewhere between 'robot' (moment 5) and 'inspection' (moment 6) in drawing together the spaces of Yazzey's body (the excretion of oxytocin and her biological and informatic properties) with the environmental management of her body (milking premises and hygiene regulations). It does so by returning to consider how Yazzey's 'milk pumping through

plastic tubing' (moment 4) is tested for its composition. My purpose in so doing is to illuminate how the raw milk that Yazzey excretes from her body exceeds characterization as becoming a product (for human consumption), rather Yazzey's milk has a 'rawness', and milking her becomes an intimately individual embodied happening.[37]

> I mean products have to withstand abuse - chemicals, extremes of temperature, all sorts so when you're designing a product you bear that in mind... measuring milk is no trivial problem because the milk is in the vacuum going along the pipe in this chaotic fashion mixed up with air and all you're trying to measure is the milk
> (Kevin, engineering team, equipment company A, Tuesday 18 March 2003).

The sample bottle with valve and sealing cap pictured in moment 7 was launched in October 2001 by company A. It is a push on device that attaches to Yazzey's milk line and used to take a representative sample of her milk across a milking session. Originally the idea of a dairy farmer in the south east of England, the device was developed in conjunction with National Milk Record Plc; the practical difficulties ("abuse") overcome through collaborations with agricultural, engineering and mathematics departments at universities in the U.K and Russia, and its diagnostic applications realized by working alongside the Institute for Animal Health, an independent Mastitis consultant, and members of an innovation and networking group set up by the European Union.

The document flicked through in moment 7 details what happened to the sampling device over a three month period following these discussions: building a prototype, conducting laboratory and farm trials, costing tools and materials, making a mould, assembling and marketing the product:

> A 3D CAD diagram of the product is developed into a plastic spinning process and it's a product that is cured with a laser beam so they [the research and development team] can actually produce you a prototype of the product which is actually extremely close to the final mould... with engineering you can't get the same curves or duplicate the exact same product so this is what they call rapid prototyping... [turning the pages of product proposal form] that's what we finally came up with, yes it's a rapid prototype because it's got a rounded end and in practical terms because we can't easily mould that what we've done is replaced it with a cap... the problem is that you can't mould something with a closed end that's that shape [rounded]
> (Robert, research and development team, equipment company A, Monday 17 March 2003).

Once this conversion from computer animation to workable product is complete the device is marketed for use on farms. It takes Kevin two or three hours to tool the machine and four hours for the equipment in the mould workshop to manufacture 2-3,000 sampling devices. On Folly Farm this device is attached to Yazzey's milk line and every few seconds a drop of milk drips into the cup. After the milking session the device is uncoupled and the sample sent to National Milk Records.

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[37] At this point my tale intersects with the previous story (part 4.1) and the organizational practices of the animal data centre (moment 2). It does so because the milk recording organizations that send data on milk yields and composition to the centre at company M use the device (or a similar product) that I am about to describe.

Here, a number of tests are carried out to measure the composition of Yazzey's milk: water, lactose, protein, fat, calcium, phosphorous, sodium, potassium; progesterone (pregnancy hormone) content; and bacteriological quality: microscopic counts, chemical tests and antibiotic sensitivity (after Barnes 1995). If high counts are recorded this may indicate infection or inflammation.

A burning sensation in my udder, it feels hot yet I am cold, tender, shivering; a relentless thirst, blood coming out when I urinate; I have barely enough energy to move, my leg listing.

Yazzey was diagnosed with Mastitis in December 2002 and given a course of antibiotics, her milk unable to enter the human food chain. The possible sensations and feelings that Yazzey may experience suddenly interfere with this milk recording. As Yazzey's raw milk is diluted into test tubes and a set of figures churned out, I want contemplate what Yazzey might be going through. I am left wondering, for example, what is it like to have a full udder that is painful? To know that to relieve the pressure you have to have your milk extracted, but as that milk is pumped you have difficulty standing still, the cups keep detaching, your teats becoming sorer, your skin dryer.

> One of the things that's very clear if you're talking about human healthcare is that the charge for products, well it's not very price sensitive. Whereas with the dairy sector the price of milk is low, therefore the value of the cow is low, therefore the amount you're prepared to spend on health broadly is not nearly as high... so whereas a test might be perfectly viable at £50 in human healthcare, it wouldn't even be in the ballpark at £50 for the dairy farmer. I mean we have to be looking at tests that are pence essentially
> (Robin, business development manager, equipment company A, Monday 17 March 2003).

In preference to concern for Yazzey and her health, the use of the sampling device is underpinned by a desire amongst milk producers to record as low bacteriological scores as possible. Martin, for example, aims for cell counts of under 200,000, preferably under 100,000, as he is financially rewarded in pence per litre by his milk buyer - if Yazzey is healthy her milk contains approximately 325 micro-organisms per ml which can lead to a 1p per litre mark-up. But what might it mean to think about the composition of milk and its bacterial composition in terms of Yazzey, the 'rawness' as it leaves her body, instead of a financial incentive offered to farmers? Robin's comments indicate the difficulty in so doing, pointing towards the incalculable discrepancies between human health and animal health.

The tale being narrated here is significant in bringing into focus the intimate connections among human (consumers) and animal (producers). It does so by showing how Yazzey's existence depends upon her ability to lactate and how her life is oftentimes eclipsed amid the conceptual and institutional parameters of milk production. In this way, Yazzey is corporealized as a 'product' in at

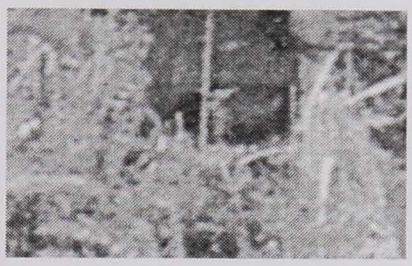
least two senses. Firstly, through understanding how milk is synthesized in her udder and excreted from her teats Yazzey becomes a set of hormonal responses (oxytocin) with the properties and composition of her milk analyzed. Secondly, there is a desire (amongst humans) to use these understandings to increase the quantity and quality of her milk by modifying the environment that she inhabits (the automated parlour) and implementing cleaning and hygiene regimes. The tendency here, then, is to view lactation as a bodily practice of cattle generically where Yazzey is mapped from 'grass to glass' (after company D), her yields monitored and Martin knowing all too well that a sustained decline will lead to her being 'spent' and destined for the slaughterhouse.

But within the moments presented in this tale something else begins to unravel as Yazzey disrupts the objects and processes under discussion. On the one hand her presence is afforded in spaces where one might imagine that she is forgotten. Manufacturers, for example, need precise information on Yazzey's bodily dimensions before being able to install a robotic parlour (moment 5) and jetstreams are tested in the laboratory before they reach the farm (moment 7). On the other hand, Yazzey's life extends beyond this ghostly presence as she materializes as an emotive being, poignantly imparting the tale in her own tone; the richness and sociality of her life setting her apart from any abstract configuration of her milking capacity. Working this strand through leads me to contemplate how Yazzey's experiences of milking are affected in her relations and interactions with other members of the herd and people, recognizing the importance of the twice daily 'walk' to the parlour and her pivotal role in guiding the herd that is so mundane yet clearly imperative to her as she jostles with Melissa at the gate (moment 4). Yazzey also leads me to question the relationship between milk production and animal health and welfare further: the 'veins visible on the surface of her skin' (moment 4), to query how her experiences differ according to whether her teats are being suckled by her calf or the milking equipment, and to speculate upon her (painful) experiences of Mastitis.

4.3 Digestible Bodies

Each of the tales so far appear to deal with quite different empirical issues. On the one hand, Jasmine's 'flop' (part 4.1) traces how cow (Rosie/ova) and bull (Ideal/sperm) genes and hormones are manipulated in questioning how human interventions are affecting individual animalian experiences of pregnancy, giving birth and parenting skills. On the other hand, Yazzey's 'walk' outlines how pieces of equipment and innovative technologies can increase milk yields in seeking to reconcile productive innovation with Yazzey's experiences (health/welfare) of milking (part 4.2). However, a common thread that interweaves these stories is feed. Rosie, for example, needs to store nutrients in her bodily tissues prior to Jasmine's flop and Yazzey's blood needs to pump nutrients to her udder for her to synthesize milk. In this final section I want to continue to engage with individual cattle in the spaces everyday life by attending to the importance of nourishment. Consider the following empirical instance:

Moment 8: Eating



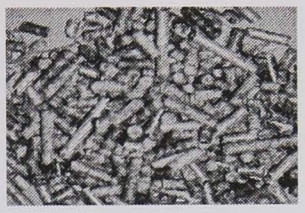
In the field with Margaret –
four steps forward, bending down, sniffing, pause, one huge gulp – ears flick back and swish of the tail, then two smaller gulps backwards – eyes poised to the ground, skimming the grass- lips visible, pause…avoiding the long green shoots…chewing and crunching noises – lower jaw making clockwise circular motions, tongue occasionally poking out.

Fieldwork notes, Sunday 20 July 2003.

In this last tale, then, I want to turn to this most ordinary encounter of Margaret eating (moment 8), to explore the interval between the provision of nutrients (from concentrate/dry matter, roughage/pasture) and the mobilization of her bodily tissues (rumen microbes). Moreover, I want to oscillate between the planting of seeds, growing and harvesting of crops, with issues relating to calories, flavours, palatability and edibility: how does Margaret grapple with these matters in her everyday life? I am thinking here of Margaret's performative actions - her selection of feed (the pasture patch in moment 8), processes of chewing and swallowing the grass, through to her body absorbing and releasing nutrients.

Moment 9: Seeds

"There are two methods, I think, of extracting sugar, one is solvent and the other one's physical extraction - pressing. What's left after that, the residue, is a very sweet material that is relatively high in energy and readily available energy…so that is a valuable commodity to us as a raw material because it's sweet, it's palatable, and it's easily digested. So we use sugar beet pulp as one of the raw materials in our diets. The problem with sugar beet and a lot of other raw materials is that they vary in their sugar content, they can vary in their protein content, they can vary in their energy level and sometimes they contain natural oils and the oil level can vary as well. So because of that we can't deliver consistent nutrition to the animal unless we can understand what those variabilities are…so to do that we have to analyze every raw material that we take in…and we feed it into a database…and it is that database that drives our formulation system. So, if say we're going to mix three raw materials together for this diet, we need to know what this week and last weeks values are, where it's come form - Brazil?, Argentina?, what the level of protein is, its gradeability and so on and so forth. So in order to produce complex nutrition you have to have an analytic laboratory that is analyzing all the raw materials…so we have a huge laboratory network where we literally spend millions of pounds on analysis".



"When we buy pulp kernel, what we do is fly the sample over, okay, the way the boat comes in and picks up the pulp and puts it in containers 1,2,3,4,5,6 we take a sample from 1,2,3,4,5,6 and we put it on a plane and fly it over and analyze it…and we already know the quality of 1,2,3,4,5,6 and potential problems - soil, toxicity - before the boat arrives and that is the degree to which we go to.
Dean, business and development team, feed company W, Thursday 6 March 2003.

…

Following the 'yellow brick road' to reach the mill…the 'nerve centre' people rushing, phones ringing, computer screens flashing, seeds arriving from Argentina…production plans being devised, determining the raw materials needed and if these are available (commodity, purchase number, contract number, weight, location, customer information).

…walking up a narrow staircase, the 'sampling room' – a shelf full of glass tubes and containers of pellets, nuts and rolls, tested locally for moisture and density, a selection sent to the central laboratory.

…on the production line - two intake pipes and one bin per material; wearing overalls, eye and ear protection – it's dark, dusty, loud - thudding noises from the grinding system as seeds travel through the pipes; touching the grinder, it's hot and small fragments of seed are shooting out through a partition.

… in the warehouse, a bag of calf QRD pellets dropped and spread across the floor.

Journey round the feed mill, Monday 10 March 2003.

…

"So the whole thing with fertility is that it's controlled by hormones, and we're looking at nutritional strategies that will improve these hormones. The objective is - well we're two years into a three study - okay, from all the work we've done what is the best diet, we believe, to feed those cows. Then there will be quite a lot of fairly complex scientific work…they'll collect eggs from them and look at how the eggs are developing, they'll inseminate them and look at the quality of the eggs developing. They're trying to find the optimum diet to improve fertility".
Anna, cattle nutrition team, feed company W, Thursday 6 March 2003.

Margaret produces up to fifty litres of milk a day and for her to be able to maintain this consistency Martin carefully monitors what she eats. On Folly Farm Margaret munches pasture (moment 8) and roughage, her diet supplemented with concentrate feed throughout the year. Margaret requires these additional feed compounds as she is only be able to produce thirty litres of milk (spring/summer) and up to twenty litres of milk (autumn/winter) each day if eating fodder from the farm alone:

> there's a gap between what the grass can provide. Our job is to try to make up that gap, by finding the energy and protein that the cow requires
> (Anna, cattle nutrition team, feed company W, Thursday 6 March 2003).

Collectively, what moments 8 and 9 allude to, then, are the ways in which Margaret's nutrition is comprised of a range of feedstuffs (grass, hay and pellets) that are given to her to plug this gap between what the farm can provide and the quantity of milk that she needs to produce. In this way each of these foodstuffs has a logistical cartography that begins to envelop Margaret's life. I want to outline three aspects of these cartographic currencies here. Firstly, in moment 8 it is summer on Folly Farm and Margaret is grazing in the field, selecting a path to follow: deciding when to move and stop, sniffing the pasture and beginning to eat. But a range of questions push through this neat description. Why does Margaret stop at this patch? Why does she avoid the long shoots easily within her grasp?

> *Martin takes the bale into shed and shakes it over the metal barrier...Margaret twists her head to the right, ducking amidst the fodder...smelling - strands coming apart as she blows through her nostrils...smelling, pausing...taking hold of the hay, gripped by poking her tongue underneath...lifting her head slightly and taking four large gulps, her tongue thrust forward and her lower jaw moving to the left, gentle forward movements from her neck, lifting her head up, making two more gulping motions before the last bit of straw disappears, immersing herself in the fodder once more, tail swinging from side to side, flicking straw onto Melissa.*
>
> Fieldwork notes, Monday 6 January 2003.

In this second instance it is winter on Folly Farm and Margaret is in the shed. Prior to Martin collecting and distributing the bale we have been discussing silage: Martin telling me that the ideal time to harvest is when the stem shoot is wilting as the plant will retain its sugar content and cellular juices; Martin also stressing the importance of 'crushing' and 'bundling' - the need for an airtight seal to conserve nutrients, prevent mouldy growth and protect from ammonia and butyric acids that impair milk quality. The culmination of this preservation is depicted in the empirical instance above, through Margaret's willingness to eat and in her sociable exchanges with Melissa. But I am left wondering here how the smells, tastes and chewing sensations may differ compared to pasture?

How does Margaret access the trough, interact with other cows by standing in line, competing for feed?

In the third and final instance we are touring a mill (moment 9), following by-products from the human food chain (wheat, barley, soya) as they are sourced from crops worldwide, passing through intake pipes and bins; touching the grinding system and seeds amid the intense heat and dust. Beyond the mill, what might Margaret's experiences of consuming the dark chalky pellets pictured be?

In accentuating these three materials it is not my intention to describe how feedstuffs (pasture, roughage, pellets) make linear journeys from field crop to animal trough; rather, I want to consider how the questions that I have posed begin to illuminate Margaret's being-in-the-world. Here I make two cuts. The first cut follows silage and pellets as they are sourced and gathered. The second cut looks at how feedstuffs are used in formulating nutritional packages for cattle.

This first cut picks a way through how pellets end up on Folly Farm and inside Margaret. This phase begins once the mill receives an order from one of four call centres in the U.K. The order is fed into the site computer and this generates a 'production plan' determining the type and quantity of raw materials required alongside stock availability. During manufacture raw materials are taken from the bin, weighed, passed through a grinding system, mixed together, extruded (sieving and dusting) and sprayed with lubricant (fat or oil). Once the nutritional package is complete a sample is taken and quality control checked (for hardness, breakability) and kept for a three month period. The production plan followed at the mill supplements the fodder available on Folly Farm. Here, Martin cuts the silage, covering it with stretch film to encourage the fermentation process, picking it up without contaminating it with soil and plants, storing it in an enclosed out building to protect it from climatic conditions, the "elastic memory" effect of the film ensuring that the bale remains tightly wrapped during shrinkage (equipment company X).

The second cut switches between the mill and Folly Farm in looking at how these materials are made edible. Anna, for example, considers herself a 'bacterial farmer' in stressing the need to feed the bacteria in an animal's rumen rather than cattle per se. Extensive testing of all formulations are conducted at a specialist metabolism unit at a university veterinary department. On the one hand, this allows nutritional experts to follow the feed through a cow's body. On the other hand, and in so doing, these tests provide reassurances that the feed is palatable. A further level of palatable testing is conducted on trial farms among established customers. After these procedures are completed the product is manufactured at the mill. Moving on, an account manager visits Folly Farm and sends samples of the silage, pasture, soil and water away for analysis, discussing with Martin what he wants

for his cows (production issues), analyzing each individual in the herd (approximate size, weight, body condition, milk yield, medical history) to draw up a diet plan (nutritional package) according to the needs of the herd. But this cut enables one to affirm the problems that arise in giving technical guidance to farmers on how to feed cattle:

> reconstituted powder is formulated right and delivers exactly the nutrients that the calf needs day in day out. However, it depends on one thing, that is, effectively mixing the powder with water at the right temperature. And you would think this is relatively simple but no…the measure is the first thing because farmers tend to chuck it into the bucket, and some days they take 50% more than others and also you must always put the powder to the water and not the other way round because of the falsified effect that you get. You get lumps in the milk which the calf then eats and gets an acidic condition and digestive upset (Dean, business and development team, feed company W, Thursday 6 March 2003).

Feedstuffs, then, encompass an assortment of sites and sources in the process of becoming edible: from Folly Farm to feed mills, from harvesting a crop in Argentina to making silage on Folly Farm, and from branding, labelling and best before dates to delivery on farms. But Margaret and Martin have dispositions that interrupt the dietary package:

Using a green scoop to put concentrate into red bucket and placing the apple (cut into eighths) on top. Going into the shed…."come on, come on, try that"…while the other cattle make their way to the trough Martin takes the bucket to the back of the shed and stands there while Margaret sniffs it…she is lying on the ground, chewing the apple.
Once she has eaten the apple she starts on the pellets.

Fieldwork notes, Wednesday 18 December 2002.

In the moment above the sourcing of materials and production plan followed at the mill become embodied in the performance of Margaret, one can follow her decision to sniff and leave the pellets and to munch carefully, deliberately, slowly on the apple. What unfolds here is an understanding of how Margaret cannot be fastened once and for all within a herd nutritional package, as the fruit and Margaret's individuality (a separate bucket) have not figured into the account manager's calculations. I now want to move beyond Margaret's selection and chewing of food, to grasp what happens next as and after she swallows. What happens to pasture, roughage and pellets as they make their way through Margaret's belly?

Moment 10: Stomach

Animal Description	Dry Cow: Holstein cow; bwt. with conceptus 1609 lbs (730 kg); mature bwt. without conceptus 1499 lbs (680 kg); BCS = 3.3, 57 mos. of age, 240 days pregnant, calf weight = 99 lbs (45 kg) gaining 1.5 lbs (0.67 kg) with conceptus	Prefresh Diet: Holstein cow; 270 days pregnant, mature bwt. 1499 lbs (680 kg), BCS = 3.0		Fresh Cow: Holstein cow; bwt. 1499 lbs (680 kg); mature bwt. = 1499 lbs (680 kg); BCS = 3.3, 58 mos. age, milk fat = 3.5%, milk true protein = 3.0%, milk lactose = 4.8%, days in milk = 11		Lactating Cow: Holstein cow; bwt. 1499 lbs (680 kg); mature bwt. = 1499 lbs (680 kg); BCS = 3.0, 65 mos. age, milk fat = 3.5%, milk true protein = 3.0%, milk lactose = 4.6%, days in milk = 90		
		Entering 1st lactation: bwt. 1378 lbs (625 kg) with conceptus gaining 2.1 lbs (0.96 kg) with conceptus	Entering 2nd lactation or greater: bwt. 1656 lbs (751 kg) with conceptus					
Milk production, lbs	--	--	--	55	77	77	89	120
Dry matter intake, lbs	31.7	23.4	30.2	29.7	34.3	51.9	59.2	66
Trace Mineral, ppm DM								
Cobalt	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Copper[a]	12	16	13	16	16	11	11	11
Iodine[b]	0.4	0.4	0.4	0.88	0.77	0.5	0.44	0.4
Iron	13	26	15	19	22	15	17	18
Manganese	15	22	15	21	21	14	13	13
Selenium	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Zinc	21	30	22	65	73	46	52	55

Animal Description	Growing Heifer: Holstein heifer; BCS = 3.0; mature bwt. 1499 lbs (680 kg); to calve at 24 mos. of age			Young Calves[a] Milk Replacers	Young Calves Starters	Young Calves Grower Feed
	6 mos. 440 lbs (200 kg)	12 mos. 660 lbs (300 kg)	18 mos. 990 lbs (450 kg) 90 d gestation			
Dry matter intake, lbs	11.4	15.6	24.9	--	--	--
Trace Mineral, ppm DM						
Cobalt	0.11	0.11	0.11	0.11	0.10	0.10
Copper[a]	10	10	9	10	10	10
Iodine[b]	0.27	0.3	0.3	0.5	0.25	0.25
Iron	42	31	13	100[c]	50	50
Manganese	22	20	14	40	40	40
Selenium	0.3	0.3	0.3	0.3	0.3	0.3
Zinc	32	27	18	40	40	40

	DM (%)	CP (%)	BP* (%)	TDN (%)	NEL Milk (Mcal)	NEL Fat (%)
Soybean silage	32	17.0	40	17	16	1.0
Soybean hay	88	13.0	30	45	46	2.4
Sudex silage	26	2.1	30	13	12	0.8
Sugarcane bagasse	92	1.8	40	40	35	---
Sugarcane silage	30	0.8	--	19	18	---
Sunflower meal	90	28.0	30	58	62	1.0
Sunflower meal	90	40.0	30	64	65	1.0
Urea	99	281.0	--	--	--	---
Wheat, whole	89	12.6	22	75	82	1.6
Wheat, midds	89	16.0	21	76	74	4.5
Wheat silage	26	3.0	30	15	16	1.0
Whey, lacto	61	44.0	--	66	70	---
Whey, dehy.	93	13.0	--	72	75	---
Yeast, brewers	93	44.0	42	72	75	1.0

*BP = bypass or escape protein.

(Adapted from NRC 2001:223, 266-268, 270, 272, 280)

...

"The biology of the dairy cow, as in other mammals, is to a large extent defined by mechanisms aimed at supporting milk production. One of these mechanisms is the ability to store nutrients in body tissues before the young is born and then to use these reserves for milk production if nutrient availability is limited...but this natural ability has been exaggerated by selecting for increased milk yield in modern cows and this may contribute to metabolic disturbances [...] There are four compartments, four fermenters in a cows stomach. The fourth one, the rumen, is significant. The micro-organisms in the rumen break down the chemical bindings in the feed so that the nutrients can be accessed. The feed is fermented in the rumen; it stays there for about 24-48 hours before it passes through to the intestines, then the enzymes in the intestines activate the digester which makes the nutrients available to the cow"

Sandra, feed scientist, department of veterinary medicine, university 8, Monday 7 July 2003.

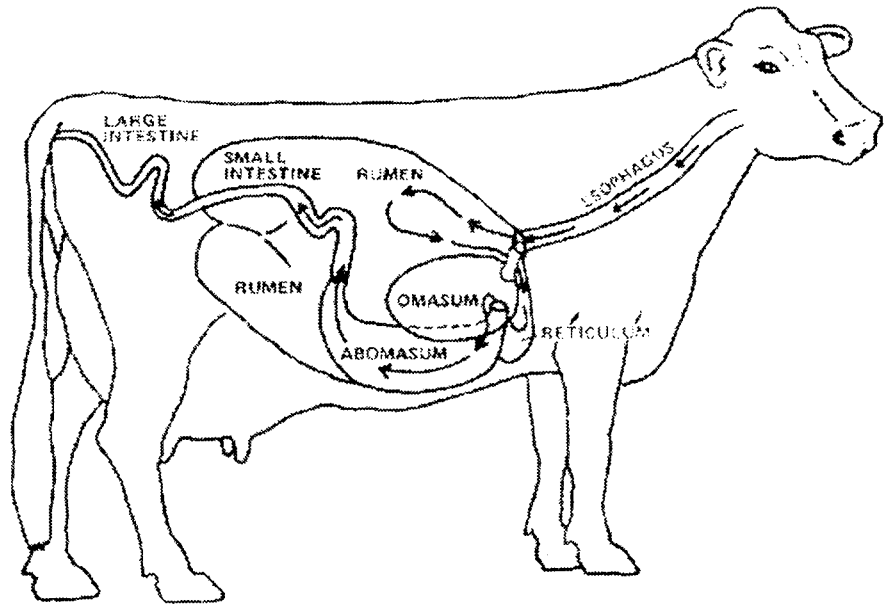
...

walking into the lab, finding that the 'isolation chambers' are empty. I am being told that the rumen is a competitive environment with thousands upon thousands of micro-organisms all competing for feed. The purpose of conducting trials is to determine which of these organisms takes over, and the isolation – one cow per chamber – necessary to take samples of blood, urine, udder tissue; to measure methane gas and heat production. But I am also informed that conducting feed trials is "risky", it takes up to seven weeks for the rumen to adjust to new feed, the micro-organisms might not cope, digestion may stop altogether resulting in intoxication and starvation.

Tour with Sandra, Monday 7 July 2003.

In this moment the intimacy of Margaret eating an apple, and the logistical cartographies of food (moment 9), are subject to renegotiation as cattle bodies are tested in veterinary laboratories and hypothesized by nutritional experts. The contents of Margaret's red bucket are translated materially (into rumen microbes) and metaphorically (feed tables), thus moving beyond issues of palatability and edibility to calories and processes of ingestion. In this moment these shifts are grounded in a single site: a digestive organ called the rumen (see figure 1.3). It is the microbes (bacteria, protozoa and fungi) in this organ that digest feed and release nutrients into Margaret's body (part 1.1); the tables, quotations and description (moment 10) intended to illuminate the ways in which Margaret's diet (pasture, roughage, concentrate) is metabolized. As part of this digestive tract, feedstuffs become grouped and divided into nutritional categories: carbohydrates, fats, proteins, minerals, vitamins, fibre and water (Forbes 1986). The tables, for example, displaying the minimum dietary requirements that cattle require under differing production levels and lifecycle stages, and the laboratory at the university veterinary department tracing these requirements in practice - following feedstuffs as they are metabolized in an individual cow's stomach. Where do these figures and experiments come from and how do they relate to Margaret's life?

Figure 4.7: Cattle digestive system



(Baldwin et al, 1997:256)

Figure 4.7 traces the ways in which cattle physiologically break-down feed, journeying from the mouth, through the oesophagus, rumen, reticulum, omasum, abomasum, small intestine, large intestine, and exiting the body through the rectum and anus. Margaret swallows a piece of apple, but it cannot be used by her body unless it is metabolically broken down into smaller components. The apple enters her reticulum, the omasum absorbs the fruit's water content, fatty acids and minerals. Once the pieces are between 1-2mm in size they enter Margaret's abomasum, the digestible

compounds absorbed by the small intestine. The indigestible compounds carry on to the large intestine where they undergo further fermentation, any compounds not digested at this point excreted in her faeces (Sutton 1985). The rumen microbes in Margaret's body are vital for her to be able to digest food. For these microbes to function properly Margaret must not be overfed, the PH of the feed balanced so that any carbon dioxide build-up is limited. For if the rumen is unable to process the feed Margaret may become bloated or sick. In this way, the value of the pellets pictured in moment 9 is determined by Margaret's physiological state and rumen microbes (Hayasaka et al, 1995; Orskov and Ryle 1990).

The tables in moment 10 provide baseline nutritional recommendations that feed advisors can draw upon to formulate rations to supply Margaret with nutrients. These tables derive from research carried out in the United States and are used alongside nutritional standards in the U.K. drawn up by the Agricultural and Food Research Council (AFRC). Nutritional standards are defined as "estimates of nutritional requirements and feed values and/or quantitative rules for responses of animals to feeds that are commonly accepted in the agricultural industry" (BSAS 2002:2). In the U.K this enterprise of generating nutritional standards for dairy and beef cattle is undergoing substantial revision. Presently, two systems of measurement provide the framework for formulating diets for cattle: metabolizable energy (ME) and metabolizable protein (MP)[38]:

ME: Km=0.35/GE+0.503

MP: Km = 238.91g + 340.86g'

These frameworks are under review as chronologically they rely upon data sets collected in the 1950s (Agnew and Yan 2000; Underwood and Suttle 1999). The consequences of using this data are two-fold. Firstly, ME and MP do not take into account modern dairy farming practices leading to the lack of a coordinated industry wide feed system in the U.K. Secondly, this means, in practice, that Anna at company W has to use ME and MP alongside tables generated by the National Research Council in the United States (moment 10). To overcome the disparate feed characterization system in the U.K, the AFRC have undertaken a four year technology transfer programme. This project, entitled 'feed into milk', is coordinated by the University of Nottingham and funded by DEFRA. The programme is concerned with developing food intake prediction models and examining the performance of existing predictions (ME/MP).

What emerges from the NRC tables and AFRC work are a series of figures that determine the energy for maintenance (NEM), energy for lactation (NEL) and the total digestible nutrients (TDN)

[38] Please note: these equations are based upon the nutrient requirements of Holstein Friesians for maintenance only (see AFRC 1990 1993).

that dairy cattle need, expressed in megacalories (Mcal) or pounds. Margaret's daily nutrient requirements for maintenance, for example, are: 1.18 pounds of protein, 9.02 Mcal energy for lactation, 8.70 Mcal digestible nutrients, .049 pounds of calcium, .034 pounds of phosphorous, and 41 (-1000IU) vitamins (after Faverdin et al, 1995:95-120). These figures are subject to change if Margaret becomes unwell and her appetite suppresses, if a new feeding schedule is implemented, or during her transition from summer pasture to winter housing (see also Allen 1996; Chilliard et al, 2001; Vernon et al, 2001). And it is here, amid these uncertainties, that I am left pondering the relationship between the nutrient requirements in the rumen environment and the bodily needs of Margaret. Who or what is being fed here and for what purposes? Specifically, what I am trying to get at is how Margaret becomes institutionalized and compartmentalized as a series of 'requirement questions'; the accounts manager and Martin exploring what they need to feed Margaret for her to yield X litres of milk, or what might happen if Margaret is fed soya rather than rape, or given an extra mineral element. There remains a tendency to position the responses to such questions according to milk production, the environment at Folly Farm and food (human) safety. What is missing here is Margaret: what are her experiences of ingestion - breaking down, absorbing, releasing and excreting?

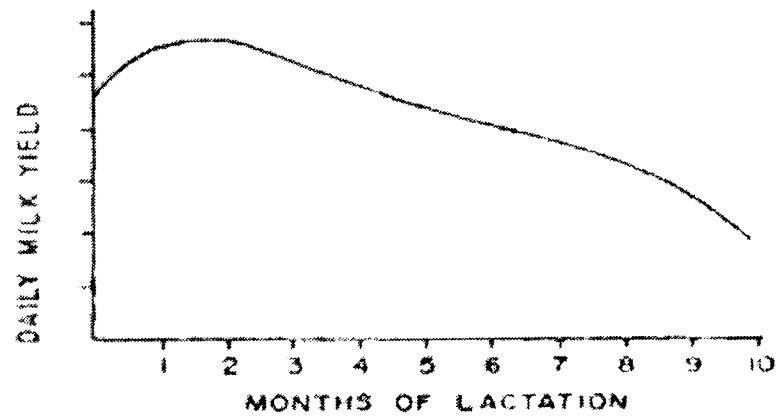
I want to end this tale by articulating more compellingly the ways in which Margaret modifies and perverts the metabolic modes of ordering under discussion. On the one hand these moments of eating, seeds and stomach come together to show how the life practices of Margaret connect with those of plants, humans and environments over considerable distances. These distances conflate as both fodder grown on Folly Farm and commercially produced animal feed by company W are analyzed to become a nutritional package. Within these analytical configurations Margaret is anatomized, the microbes in her rumen and their role in metabolizing nutrients dissected. Moreover, the feedstuffs that she is given have a geography as they become traceable commodities: from planting and growing to harvesting and shipping; and from milling and marketing to delivering and consuming. This traceability encompassing protocols for sampling and monitoring, cleaning and labelling, laboratory and trial farm assessments. However, amid this unilateral to-ing and fro-ing (crop-stomach-milk) Margaret is overlooked. In particular, an awareness of how feed ends up in Margaret's stomach remains obscure. Crucially, what might it mean to unpack the relationship between Margaret's personal fleshy well-being and the fleshiness of what she is given to eat? I want to briefly summarize three ways in which Margaret's personal engagements with food challenge dietary understandings of feedstuffs.

Firstly, I am thinking about the *selection repertoire* of Margaret's eating practices. But I am not concerned with what feed scientists might conceptualize as 'voluntary feed intake', rather I am curious as to how Margaret decides whether something is edible or not. Why, for example, does she

decide not to eat the long green shoots in the field (moment 8), to eat pieces of apple rather than concentrate? How does Margaret smell, hold, touch and feel about food - her acts of sniffing, the use of her tongue? Secondly, I am interested in *taste* and Margaret's experiences of grabbing and chewing food. How might this vary between apples, roughage and concentrate - sensations of juiciness, softness, and chalkiness? Thirdly and finally I am thinking about *nutritional habitats* and how these relate to the feedstuffs that Margaret is given: the individual cubicles at the university research laboratory, the sheds at the trial farms and the red bucket and pasture on Folly Farm. How do the human-animal and animal-animal interactions, studies and tests being conducted at these sites alter the behaviour and biological awareness of cattle?

4.4 Conclusion... Rosie, Jasmine, Ideal, Yazzey and Margaret

Figure 4.8: Lactation curve



(Alban 1995:214)

As I hinted at the beginning of this chapter (part 4.0), the corporeality of cattle has occupied human thought for centuries. In the past, the desirable traits of cattle have been shaped in using frozen sperm to produce offspring (figure 4.1), by drawing up inspection points of a well-developed udder (figure 4.2) and in highlighting the consequences of dietary deficiencies (figure 4.3). I return to these historical threads in closing, by following on from where these images left off. For all the chronological distance presupposed between these past images and the more contemporary tales narrated through this chapter, they do, I think, conjure up some parallels in the graph above (figure 4.8). This diagram, known as a 'lactation curve', is a set of points plotted to display the production output of a cow or group of cows over a period of time. I want to offer this graph as a way of demonstrating that what is perhaps most pertinent in the pictures, images, quotations and descriptions of settings in this chapter, is the degree to which cattle lives all too often become

pitched in terms of a global species or population. In other words, there is a belief that the corporeal lives of cattle can be understood according to this lactation curve. For example, the 'standardized' model of this curve (figure 4.8) displays how, in the cattle population, milk production reaches a peak in cows approximately six weeks after calving and then declines at a steady rate (Alban 1995); the level of decline dependent upon reproduction (age of animal), milking (frequency) and feeding (quality and quantity of food available). Moreover, the resultant (corporeal) organization of animal life remains preoccupied with managing the biological lifecycle, anatomy and survival of cattle generically. Thus, in historical and modern-day contexts, the aim of farmers (Martin) is to maximize profits by controlling and manipulating the lactation curve so that yields will increase and decline at a sustainable rate.

There is, I want to argue, a critical need to apprehend how the lactation curve (figure 4.8) misses the reality that we (humans) seek to capture through it. For this chapter has illuminated some of the ways in which individual animals stand as a medium of its failure and offer hope of its restitution. On the one hand, this points towards a need to (re)model lactation curves at the level of the individual animal; (perhaps) to deploy the curve to organize cattle into feeding and calving groups (parts 4.3 and 4.1), or as a diagnostic tool to identify nutritional disorders (part 4.3). On the other hand, there is, I believe, something more to come if one is to actualize how individual animals disrupt lactation curves. Think about it like this: rather than chart Margaret's rumen microbes, to query her experiences of edibility and palatability; rather than monitor how Rosie's yields vary according to her stage of pregnancy, to question what her experiences pre and post birth might be. Through the chapter, therefore, I have sought to bring the three body-practices (breeding, milking, feeding) and the corporeal spaces of the body - reproduction (straw/natural service), lactation (automation/parlour), and digestion (rumen/belly) - together so as to explore the lives of Rosie, Jasmine, Ideal, Yazzey and Margaret in ways that disaggregate them from this graphical representation. To articulate these thoughts more fully, table 4.1 summarizes some of the key lines of comparison that can be drawn between the three body-practices as part of this call for disaggregation.

Table 4.1: Tracing the corporeal lives of cattle

	REPRODUCTION	LACTATION	DIGESTION
Body Organs	*Sperm/Ova*	*Udder*	*Rumen*
Bodily Processes	*Spermatogenesis* *Oogenesis* *Fertilisation*	*Oxytocin* *Let-down* *Teats*	*Ingestion* *Digestion* *Metabolism*
Bodily Orderings	*£PIN/£PLI*	*Yields/Composition*	*ME/MP*
Fleshy Bodies	***Rosie Jasmine Ideal*** *Pregnancy* *Parental bonds*	***Yazzey*** *Mastitis*	***Margaret*** *Edibility* *Selection/Taste*

So what are the links between these battles to manipulate the lactation curve (figure 4.8) and locate the corporeal lives of individual cattle (table 4.1)? Locating this ambivalence is an important gesture in opening up understandings of animality. It is here that one might accommodate corporeal differentiation in making a movement away from 'body as flesh' towards 'fleshy bodies'. Let us be clear as to what is meant by this: a movement away from seeking to understand how cattle bodies are constructed (by humans) and acted upon by technologies in ways that lead to their (re)composition; towards a phenomenological reflection on the body that illuminates how cattle have distinct animalian ways of being in the world. I want to conclude by offering three lines of thought to take this engagement further.

Firstly, and theoretically, the absence of individual cattle as they are rationalized or conditioned to conform to the needs of the lactation curve reverberates back to the network geographies of ANT (part 2.2). Indeed, I might have utilized ANT through the chapter to follow how Ideal as an 'actant' opens up areas of uncertainty in statistical modelling (£PIN and £PLI indexes), or to trace Jasmine's birth back to the canister of coloured straws and artificial insemination centre. And yet, as I have made clear (see part 2.3), I feel the need to press beyond a Latourian ANT bent. For this would, perhaps, lead Ideal and Jasmine to be seen as traceable entities mobilized through a network where human knowledge about their animalian corporeality remain primary. Rather there is, I believe, a whole other theoretical apparatus emerging here; one that recognizes the fleshiness of individual embodied animals, their agencies, sentiency, and intimate encounters with others. And it is these descriptions that take one away from mere biology (organs, processes, orderings) to matters that are

personal and micro-level and fall outside the remit and concerns of network geographies. I am thinking here, in particular, of how Jasmine's corporeal absence has a presence that remains in Rosie in such a way that licks, nudges, smells and copycat acts remain even as she becomes cuts of meat (part 4.1); how Martin gives Margaret pieces of apple that do not fit within the rations or production plans being devised by feed scientists and account managers, and how Margaret uses her senses to determine when and what she is going to eat - her 'sniffs' and 'chewing' practices. My point, put simply, is that perhaps one grasps Rosie and Margaret's fleshy bodies not by following their inflections, competencies and effects in actor-networks, but by touching upon the micro-level and everyday.

Secondly, to become attentive to the ways in which (personal) human-cattle relations unfold in the world reflects and requires a 'more' animalian sort of empiricism. In this way, the ethnographic insights into the corporeal lives and bodily geographies of individual animals momented through the chapter are important in opening up a window of thought about what it might mean to be a cow, bull or calf in their immediate spaces of dwelling (after Philo 2005). Moreover, rather than thinking about 'oxytocin' or 'let-down' [lactation] in terms of a set of hormonal responses, to spend time with animals in ways that query how what takes place before or during the milking session affects an individual animal and the yields and composition of their milk. I am thinking here of how Yazzey takes it upon herself to maintain a position nearest to the gate. I want to suggest, therefore, that it is only by spending time in the company of cattle, up-close and face to face, will one come close to unsettling the habitual assumptions about 'body as flesh' inherent in figure 4.8 and articulated through table 4.1.

Thirdly, the emphasis here on the corporeal lives of individual animals and the everyday open up a series of critiques around the scientific and technological practices that continue to domesticate and commodify cattle. What laboratory practices and types of animal husbandry are we prepared to accept or tolerate and what are the impacts of these decisions on cattle? Crucially, how can the individual animals narrated through the chapter disturb these spaces and practices of agricultural production? Should Yazzey be 're-programmed' so that she can 'choose' to be milked by a robot four or five times a day? And what are her feelings as she suffers from Mastitis? What are Rosie's sensations of artificial insemination, her experiences of pregnancy - her swollen body, tired and wobbly legs, milk seeping from her teats - and emotional responses as she is separated from Jasmine? On the one hand, these questions point towards how Martin does, and might further, attend to the needs of individual animals - feeding Margaret fruit from his hand or a particular bucket, remaining with Rosie after she has given birth, keeping Yazzey in the herd to lead the milking sessions after she is 'spent' (falling milk yields). On the other hand, I am mindful too that cattle on Folly Farm must be imagined alongside animals in laboratories and veterinary clinics. In particular, I am

reminded here of Ideal and the electrical impulses that he is given for his body to produce sperm, his semen collected using an artificial vagina; the 'dummy cow' on a continuous course of hormonal injections so that she is permanently in estrus; or cattle kept indoors in individual cubicles so as to 'participate' in feed trials. Taken together, these everyday and hidden practices of lived experience can, perhaps, reach out and pose difficulties to the ways in which lactation curves are drawn. How might the generic lactation curve (figure 4.8) change if one were to plot milk yields according to these speculative examples: if Jasmine were kept with Rosie for a longer period of time and Rosie not inseminated after 3.5 months, if Margaret were given feedstuff choices (apples, carrots, fodder, concentrate), or if Yazzey determined the frequency of trips to the parlour?

These preliminary points are taken forward in the next chapter which seeks to explore how cattle make-up landscapes, places and habitats. Amid these tales of body-practices a range of spatialities have emerged: laboratory, computer software packages, artificial insemination centre (reproduction); office, workshop, production line (milking); and mill, cubicle, field (feeding). The chapter that follows continues this theme of tracing individual cattle in the spaces of everyday life by returning to the ideas of dwelling (part 2.4) and blank figures (part 2.3) to map how individual animals occupy specific physical contexts and go about co-constituting spaces and places through their encounters with humans, other animals and objects.

5. Cattle Topologies: ecological habitats, dwelling places, motile landscapes

Figure 5.1: Traditional breed incentive scheme
(English Nature 2002)

Figure 5.2: 'They're burning animals again'
(The Economist Editorial 3 March 2001:17)

5.0 Introduction: spatiality of animals

It is in coming across these images (5.1 and 5.2) that I began to think about the ideas that I want to work through in this chapter. For me, at least, these photographs indicate the role that animals play in the construction of individual and collective place and landscape identities. Figure 5.1 is taken from 'The Traditional Breed Incentive' brochure; a scheme organized by English Nature to provide area-based financial assistance to farmers to support grazing by traditional cattle and manage biodiversity. The focus is on site-based conservation (of traditional cattle and wild beings) within designated tracts of land whereby farmer participation is negotiated at the level of an individual farm according to the presence of 'eligible breeds' (adapted, distinctive, rare) and compliance with a set of 'management prescriptions' (fertilizer, sludge, fungicides, insecticides, grazing periods, stocking rates) (English Nature 2002). The scheme draws upon ecology so as to provide a scientific rationale for biodiversity management in the face of competing demands over the use of land (agricultural production, housing, tourism). Figure 5.2, in contrast, derives from the Foot and Mouth Disease (FMD) epidemic in the U.K, the first case confirmed on 21 February 2001 and traced to a farm in Northumbria. The spread and magnitude of the outbreak culminating in 2030 confirmed cases involving 1.3 million animals and lasting for some 221 days (Scott et al, 2004:3). The photograph itself reveals attempts to bring the epidemic 'under control'- slaughtered animals, burning pyres and burial pits - the façade of this image accompanied by a spatialized form of control that saw a range of policy measures implemented: from three mile exclusion zones within infected areas, to the mandatory slaughter of all infected animals; and from biosecurity measures (spraying vehicles before and after leaving farms, shoe dips), to banning live animal transport. This attempt at policing

physical territory to try and halt the disease was led by a variety of experts (vets, virologists, farmers, politicians, countryside organizations) bringing different sets of knowledges to understandings of the relations between animal bodies, the land and virus; knowledges that often bore little relation to the static terrain being imagined and the unimaginable viral materiality of FMD. Indeed, it soon became clear that FMD did not fit nor belong within a fixed spatial order (see Donaldson and Wood 2004). Collectively, then, images 5.1 and 5.2 invoke issues relating to scale and the relationship between humans and animals in space and place: from the confinement of animals in 'designated areas' as an aesthetic presence in an idyllic countryside, to the mobile corporeal lives that animals lead in harbouring and spreading disease that exceed known spatial parameters. Moreover, these images begin to conjure up the ways in which human-animal relations are both embedded in particular places and play-out across spaces ('real' 'material' 'virtual').

This chapter continues to explore animalian ways of being in the world but shifts emphasis to consider the role of individual cattle in the shaping of habitats, places and landscapes. The chapter is, essentially, about how cattle move in, through and out of places as part of an attempt to grasp the ways in which animals live in the world and how their experiences in this world unfold and exceed the (physical) boundaries and (assumed) boundedness of Folly Farm. Throughout, the chapter opens up a number of questions regarding the spatiality of human-cattle relations. How might cattle be seen as co-constituents in the making and remaking of particular places and spatial formations (after Thrift 1996)? How do cattle become present or absent through their performances in particular situations and locations? What geographical, ecological, cultural and scientific contexts are underpinning these formations and, crucially, how might these unravel if place is understood in terms of the everyday lives of individual animals? Thus, how are cattle unsettling how 'we' know where 'we' are in time and space and how 'we' position ourselves in the world (after Clifford and King 1993)? To work through these questions the chapter is framed according to three conceptual arenas: ecology, dwelling, and motility.

In chapter 2 I outlined how ecology, as a systems science, theorizes human-animal relations according to three levels of biological matter: an individual organism, a population or community of organisms and an ecosystem. In this way I sought to illuminate ecological focus on individual organisms in their environment and the role that animals play in influencing the conditions of place. Moreover, I described some of the tensions in these theorizations and, in particular, the relationship between observing animals in their environment and formulating theoretical statements, thus leading to the creative, imaginative and probing aspects of the lives of animals to be overlooked (refer to part 2.1). To some extent these tensions are being reworked as part of a (re)turn to ecology within geography. For example, Thrift's (1999) 'ecology of place' - a description of how the materiality of place is inscribed in our (human) bodies; Yarwood and Evans' (1998 1999) exploration

of the role that rare breeds of farm animals play in the making of the British landscape; and Whatmore and Hinchliffe's (2003a 2003b) use of the term 'recombinant ecology' in staging conversations between nature conservation and urban regeneration (for further examples see Fitzsimmons 2004; Macfarlane 1998; Ward et al, 1998) [39]. In taking valuable insight from various forms of ecological thought, I want to draw upon the concept of *habitat*. For this concept presents a way of thinking about how an individual animal experiences actual places (Dusenbury 1992 2001), thus enabling one to excavate some of the ways in which individual cattle live in, relate to and are affected by a mosaic of habitats (shed, field) that comprise a micro-ecosystem (Folly Farm, agricultural show).

My second conceptual arena, *dwelling*, extends these ecological insights in drawing attention to how habitats exhibit a rich intermingling of beings that are not necessarily seen in terms of protecting and conserving sites to be fixed and buffered (figure 5.1). Rather, I am moving here towards recognizing the creative presence of animal bodies in place:

> their social interaction through movement, the differing capacities of their senses, and the marks they leave on landscapes, are all about animal bodies dwelling in landscapes in differing relations to humans (Jones 2003:300).

In chapter 2 I positioned dwelling as an approach that enables one to deal with how the ecological and cultural, human and nonhuman, local and global come together in particular places (part 2.4). Moreover, I outlined the ways in which this concept can be used to examine how animals leave their marks and traces through the fabric of places over time and in more immanent and momentary ways. Deriving from the phenomenological work of Martin Heidegger, chapter 2 made a shift from seeing human, animal and environment relations as a 'building perspective', where human mental constructs are imposed (built) upon the world, to a dwelling perspective, where any act of building, living and thinking is formed in the context of being-in-the-world (Jones and Cloke 2002:81). However, I also signalled the ways in which humans remain influential in setting the conditions in which animals dwell, queried the spatio-temporal bounds of the concept, and the series of dichotomies (human/nonhuman, vision/embodiment, written texts/bodily experiences) that may be enacted. Indeed, these difficulties become increasingly apparent in the empirical materials that follow.

What begins to emerge in each of these conceptual arenas is a sense of the ways in which animals are tied to place but that any notion of place needs to acknowledge the ongoing, temporal and mobile lives that animals lead (see also Casey 2001a):

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[39] Please note: this (re)turn to ecology is not confined to geography but is being taken-up across social scientific disciplines. Examples include: Murdoch's (2001) call for the 'ecologising of sociology' and Milton's (2002) articulation of an 'ecology of emotions'.

> Places also emerge then as time-space configurations and as such space is always and everywhere implicated in what human and nonhuman do, think, and where they are; space is a becoming, an emerging property of relationships (Agnew 2005:92).

I want to explore, then, how (ecological/dwelt) place fits within other spatial, temporal and material arrangements so as to attend to more diasporic modes of dwellings wherein Folly Farm is not viewed as a 'purified' space and nor do cattle become 'pure' entities (Bennett 2001; Latour 1993). In this way, how might one recognize animals in landscapes of speed, light and power (Thrift 1996)? How do places 'take shape in their passing' (Thrift 1999:310)? Importantly, where does mobility, comprised of other spatial arrangements and infiltrating the ways in which place is being performed, leave relational accounts of place?

My third and final conceptual arena, *motile landscapes* (after Hetherington and Lee 2000:176), seeks to address such questions in making a shift from the life and experiences of an individual animal bound up in specific places (dwelling), drawing upon a panoply of senses to interact with its environment (ecology), towards understanding how this animal becomes abstracted and caught up in far reaching material assemblages (virtual spatialities). Indeed, I want to (re)introduce the figure of the 'blank' (after Hetherington and Lee 2000) as a way of attending to the dynamic role of cattle in placing, to supplement understandings of relationality with elements of surprise and uncertainty. How do cattle as figures of spacing complicate the ways in which people perceive and recognize their presence/absence and experiences in (virtual) space?

I want to pursue these conceptual arenas (ecological habitat, dwelling place, motile landscapes) in four empirical settings: field, agricultural show, laboratory, and tracing system. These settings were chosen because they provide a flavour of the different locations where cattle are present and contributing towards distinct formations in time and space: from their assumed and taken-for-granted appearance in a field or display in a show; to their 'hidden', perhaps unknown, existence in a laboratory and as a digital barcode on a database. While the embodied agency of cattle in co-constituting locations will be different in each of these settings, what binds them together is, on the one hand, a connection to a set of historical, cultural and scientific discourses and contexts ('representational' layers) and, on the other hand, how the immediacy of being in the presence of an individual animal begins to unravel these representational sheaths. Ultimately, this chapter aims to excavate how human-cattle relations might be repositioned by taking the relations between place, space and ethics (environment, treatment) and dealing with matters concerning the presence or absence of cattle and notions of animals being 'in place'/'out of place' (Cresswell 1996) seriously.

5.1 Field

Figure 5.3: Siting Folly Farm

(Photograph taken Wednesday 3 July 2002)

> I'm the fourth generation to farm here; sadly I may be the last. It's um…getting very difficult now after Foot and Mouth and with changes in the industry. I mean I haven't made any serious profit now for four or five years…The one thing a lot of people don't realize is that farming's about more than producing food. Farmers are probably the best custodians of the countryside today, without farming the landscape you see here…the plants and wildlife wouldn't be here
> (Martin, dairy farmer at Folly Farm, Tuesday 2 July 2002).

Folly Farm is a 360 acre dairy farm in the county of Somerset, south-west England (figure 5.3). This quotation indicates the ways in which Folly Farm comes to take and hold its shape in the countryside. It is here that connections between agricultural production and the environment become explicit as ideas about landscape and land improvement, farm aesthetics, wild or natural habitats and human fulfilment collide. In this section I want to briefly introduce Folly Farm as a place for humans and animals ('domestic' and 'wild') before moving on to weave together the embodied agency of individual cattle and the concept of dwelling by providing an account of a particular field.

Folly Farm is owned by Martin and his wife Sue. They have two young children and live in a house on the holding. Other members of the family and two casual workers assist Martin with the day to day running of the farm during busy periods (calving, silage making). 156 dairy cows, 20-30 beef cattle, 50-60 sheep, and more than 200 chickens live on the farm at any one time which is divided

into a number of areas: two covered sheds for winter housing and overnight accommodation, a barn housing chickens, a barn containing bales of straw and hay, yard, milking parlour and fields for growing crops (grass, hay, barley, maize and wheat) and grazing animals. The running of the farm follows a series of rhythms and cycles of activity that operate daily (milking cattle; feeding and checking on animals; paperwork) and seasonally (growing, storing and preserving crops; housing animals indoors, letting animals out to graze; calving; selling animals at market; showing animals at agricultural events). Through these rhythms and cycles there is a sense in which Folly Farm is a lifework. For it is through Martin, and his ancestors, living and working on the farm that it has been reproduced over time (see also Gray 1998). In this way, Martin carries particular memories of both family members and generations of cattle with whom he has worked, and are remembered and missed:

> You get to know them... working with them day in, day out... They're like extended members of the family... all individuals with their own temperaments... own behaviours and ways of doing things in the field... they pass it on when more cows join the herd (Martin, dairy farmer at Folly Farm, Wednesday 31 July 2002).

Folly Farm is haunted by the shadows of past lives, works, smells and noises (after Holloway 2004a), of the 'perfect' herd grazing in a field that Martin then calls upon as a 'benchmark' to compare cattle over time. Moreover, for Martin the farm becomes an integral part of the rural environment, traced through labour, land ownership patterns and investment, appearing as a set of fixities (animals, buildings, fences, walls and hedges) on the landscape. Significantly, Martin has a belief that what he is doing - his closeness to the soil and attachment to his animals - and the pastoralist and productivity conventions therein, inform the way in which he counterposes his farm to urban areas, with the presence of wild beings in this farmed environment bound up to his understandings of what is being cultivated and nurtured in this place. These ideas of 'farming', 'nature', 'rural' and 'urban' and their underpinning by a series of cultural, historical and environmental narratives, are woven and felt in the immediate present. This harmonious pastoral-environmental idyll is transposed through the marketing of the farm. In the first instance, visitors are greeted with a signpost naming Folly Farm and picturing Friesians. In the second instance, this marketing of place extends beyond the boundaries of the farm itself as Martin and Sue produce and distribute education packs to local schools (see also Evans and Yarwood 1995; Yarwood and Evans 1998; part 1.32) However, the role of animals within this promotional framework becomes ever more convoluted when Martin loses an animal:

> I suppose you prepare yourself and it's been better for Zoë straight from home, into the trailer and off to her new home... I think it's probably been good all round. I don't think she'll wonder where I am but she'll wonder where all her mates are, she won't know what's going on for two or three days and then hopefully she'll settle down... well, I know with

some good grass she'll be alright (Martin, dairy farmer at Folly Farm Thursday 26 September 2002).

Martin has a practical embodied knowledge and set of everyday skills that he draws upon to address cattle needs for space, companionship and protection. In this moment, and in the days that follow, Martin is concerned about how Zoë will settle into her new holding without other members of the herd at Folly Farm there to support her. The loss of a particular cow, and cattle interactions in and between groups, signal how Folly Farm is a place that is constantly changing. Moreover, despite its apparent fixity and ordering of space, Martin's farm is bound up with organic and non-organic things that move through and beyond its boundaries: nutrients and manure, soils and plants, water and subsidies. In this way, siting Folly Farm as a place becomes configured in a series of debates about what farms or farming should or should not be (see Yarwood and Evans 1998 2000), as Martin becomes caught up in competing rural imaginations (traditional/modern, family farming/corporate agribusiness) in seeking to reconcile the relationship between cultivating the land for crops and animals and conserving the landscape for wild beings (see Woods 1998).

These descriptions of Folly Farm indicate how the farm has been, and still is, represented, symbolized and expressed. In drawing these annotations together I want to begin to excavate two interwoven modes of dwelling: time-deepened and immanent-momentary. In so doing I want to weave these modes through descriptions of how Folly Farm is embodied, practiced and performed (Wylie 2003). For to imagine Folly Farm solely in terms of (Martin's) historical and cultural ties or as an ongoing assemblage is to neglect the living and material:

> "Penelope, Dina, Zara, Cherie, Polly, Jemma, Jocelyn, Bella, Donna, Melanie, Polly, Rosie, Melissa, Barbara, Yazzey, Margaret, Sarah...and there's various other ones that side..." *[Martin pointing and then making this clicking, pitched noise as he strokes the side of Penelope's face].* "She's a very friendly cow and this one's very quiet" - *Dina standing a few feet away, walking behind Penelope and Zara, Penelope lunging forward and nudging Martin's chest, white phlegm dripping out the side of her mouth, her back arching ever so slightly, tail raised.*
>
> Fieldwork notes, Tuesday 2 July 2002.

Figure 5.4: Siting the field

(A series of photographs taken during April and May 2002)

Older cows galloping into the field, bucking and jumping like young calves, bouncing off legs, moving quickly and skidding, kicking legs, tails high and swinging. Younger cows - Ollie and Melinda - more hesitant, pausing and watching other members of the herd, taking a long sniff...Melinda takes four springing steps forward, then stands still for a few minutes, figuring out, perhaps, the sensations of wet, fertile grass under her feet?

Fieldwork notes, Friday 16 May 2003.

160 acres of Folly Farm is allocated for the growing of herbage. The cattle are turned out into the fields in May when the grass is at its best and provides the majority of the nutrients that the animals need and they graze here until the end of October, remaining in this particular field (figure 5.4) for two to three days before being moved into another field so as to allow the grasses to rejuvenate. The field itself is comprised of rye grasses, clover, lucerne and cocksfoot. For cattle these grasses are coarse, tough and leafy; affording different tastes, textures and colours. The perimeter of the field is marked by a wooden fence, a hedgerow and stone walling.

Walking towards the field, partially disguised by the hedge and bushes, by the time I reach the gate I have been 'spotted'. A single cow comes towards me, stopping three or four metres away. Two other cows come and join her, standing behind. The rest of the herd carry on grazing, lying, resting; some glancing towards me from time to time.

Fieldwork notes, Wednesday 3 July 2002.

On this, my first visit to the field without Martin, I chose not to enter. I had a sense of unease and apprehension as I began to wonder what the cows (particularly the three nearest to the gate) might do if I entered - charge at me or nudge, lick and wait to be stroked? These uncertainties had been heightened during a conversation with Mark, a casual farm labourer, whom warned me that some of the cows could be "vicious". Whereas Martin could enter the field of his choosing I, on the other hand, was not 'accepted' as part of the herd. I quickly became aware, then, that far from being a 'generic' or 'homogeneous' field I needed to respect that this was their space, that I was an outsider. However, rather than seeking to become a member of the herd (Martin), or to somehow blend in, my strategy was two-fold. Firstly, upon walking into the field with Martin I always went to Margaret and the rest of her (lead) group first. Secondly, and when alone, as I approached the gate I would look at the animals' arrangements, behaviours and actions and was, and still am, wary of entering if certain cows (Barbara, Melissa, and Yazzey) alter their activities and come towards me. Moreover,

when I did enter the field on my own I remained near to the gate and perimeter[40]. In this way, although I was able to gain access to the field over time, my inhabitation was temporary and briefly-occurring thus our (human-animal) dwelling is also indexed by the momentary things that I and they do, things that remain spontaneous and unpredictable:

> *Stroking Rosie's back, turning round...several cows from two of the grazing groups are near the gate, one of them [Charlotte] stares, approaches something, takes a few steps forwards, stops, then makes a jerking movement back. She repeats this action several times before stopping...I move back across the field towards the gate...Charlotte and the other animals are looking at my rucksack... Charlotte is tentatively moving forwards until she is just able to nudge the bag, she licks it, sniffs and then moves away and joins the other cows...returning to graze.*
>
> Fieldwork notes, Friday 5 July 2002.

Why is the placement of a rucksack - an everyday accessory that I take with me to the farm to store equipment - a source of commotion amongst cattle? This instance, I think, leads to an encounter where the categories by which I understand things (bag) are recommenced as cattle pause at its mystery presence. Importantly, how do individual animals on Folly Farm change the nature of the field both over time and in these more momentary-immanent ways? How does their fleshiness disturb Martin's designs and plans?[41] Here I offer a series of written testimonies attentive to what individual animals do in the field as part of an attempt to think through how animals co-constitute this place.

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[40] In this moment I became aware that cattle have (animalian) ways of organizing themselves in the field. Moreover, I had felt this fearfulness before, resonating in my research with Mr and Mrs Big - my decision to wear green clothes to blend in with the zookeepers and in avoiding taking anything shiny into their enclosure (see part 3.11). In my fieldwork with cattle, therefore, I became mindful of when and where I entered the field – always at the gate and once the animals had settled into their grazing groups, and always going up and seeking permission from the lead group to be there.

[41] For an overview of how animals unsettle sanitized perceptions of the countryside see Cloke (1993).

Figure 5.5: Cattle in the field[42]

(A series of photographs taken between May and October 2002)

[42] The photographs presented in this chapter are not intended to be clear, archival or documentary – to 'show what it is like' (after Radley and Taylor 2003) – rather the images denote animals in particular places and settings. In this way, the pictures themselves are best seen as an effect produced through (cattle) performances, and are oftentimes 'out of focus' as a result of the bodily habits (i.e. urine, phlegm) and performative acts (i.e. lunging forwards, hitting, knocking, shaking off water) of the animals themselves (see also part 3.23 visual practices).

Grazing

I am slowly beginning to grasp how cattle organize themselves…the field is a kind of territory to them. And I have an increasing awareness of how they divide themselves into discrete groups that are crucial in determining how they may use and move through the field…After milking, and for the first few minutes, the herd tend to spread out across the field - a kind of disorganized milling about, trampling on vegetation, nudging each other, short moos - then, within about thirty or forty minutes, they somehow arrange and settle themselves into particular groups, each group occupying a different section of the field…the groups themselves are comprised of between four and eight cows, often determined by age, size, interactions with each other and milking time. These groupings, however, are flexible and liable to change. I have noticed, for example, how Lorna and Verity like spending time licking each other and it is Lorna who tends to initiate this by leaving Sophie's group to wander over to Verity…On another occasion I observed Rachel trying to join Barbara/Melissa's group, her presence unwelcome as she was head butted by Melissa and quickly withdrew…What I have come to regard as the 'lead' group (headed by Barbara and Melissa but led by Yazzey) set the pace and tone of movement: Yazzey, Barbara, Melissa, Rosie, Margaret, sometimes Violet, always taking the herd from left to right across the field - Yazzey just nudging in front of the group as they move…I am not entirely certain how, but, even within each group there are customary ways of being in the field as individuals take it in turns to graze - facing different directions, moving slowly, deliberately and never taking more than four or five steps at a time - and in taking it in turns to rest and lie, leaving at least two members of the group even if appearing to graze to 'keep watch' (looking up every few seconds, sometimes strands of vegetation still visible as they do so, discarded as they fall to the ground)…The animals, then, inhabit a (shifting) position both in the herd and how this plays-out in the field…It is, for example, always the 'lead group' that lye first, followed by the other groups somehow taking it in turns. Younger cows, new cows to the herd or cows joining a new group having to wait till last…The lead group, always assembling into a 'V' pattern as they move and graze.

Fieldwork dairy entry, Wednesday 28 August 2002.

Activities

…if it's a windy day Henrietta will walk alongside the hedgerow, discovering branches that have broken off…Penelope seems to spend a lot of her time at the end of the hedgerow where it joins the stone wall rubbing her body against a thorny bush…Lucy licks the wooden fence…as they move across the field the animals scrutinize the ground for loose lumps of earth – sniffing heavily and blowing them apart…they explore little holes - Barbara and Melissa sometimes bending down on their knees, eyes immersed and disappearing into the soil…now and again Hilary throws heaps of earth high into the air using her hooves… Polly and Jo upon seeing a cyclist or pedestrian will race to the field boundaries.

Fieldwork notes, Friday 30 August - Thursday 19 September 2002.

Trails

Yazzey poised at the gate, "out now" Martin shouts as he ties back the gate - Meg [the dog] running around him barking. Several of the cows (Barbara/Melissa's group) are now walking up the short muddy slope, the rest of the herd spread out and now making their way towards the gate…following in their groups but coming together as they approach the gate. As the last groups are leaving I notice the appearance of thin, narrow, muddy trails across the field; bare strips of soil exposed, flattened vegetation, culminating in a wider yet more concentrated pool of mud as one approaches the gate.

Fieldwork notes, Monday 16 September 2002.

Fences

I arrive to find Sue at the bottom of the grass verge, waving her arms in front of Phoebe. "Honestly, she really is a pain, Martin would go mad, we've done everything we can to keep her in". Meg follows me - making her way down the verge to stand behind Sue. They both approach Phoebe…"go on, stop being thick" and yet Phoebe remains firm. A few moments later, and for no apparent reason, Phoebe turns, slowly making her way up the slope and back into the field, turning round and then suddenly breaking into a trot and rejoining her group. "She hates being in, look, she's gone over there to sulk now. We never know where she is, we have to keep repairing the fence and building barricades to keep her in".

Fieldwork notes, Monday 12 August 2002.

Why does Phoebe persist in looking for weaknesses around the perimeter of the field, testing the fence for holes and gaps using her body weight? Why didn't the other members of Phoebe's group follow her through the gap? Or the other cattle? Why didn't Phoebe set off up the lane?

Fieldwork diary entry, Sunday 18 August 2002.

In this section I have begun to explore some of the ways in which cattle are imagined figuratively as part of the rural landscape, their presence on Folly Farm time-deepened and assumed so that a particular field is beset with prior expectations of the type of vegetation and its grazing potential. Alongside this, these concrete empirical accounts, quotations and images apprehend how the animals themselves have natures and ways of being and doing that enable them to refashion (human) understandings. Importantly, these accounts lead one to consider how animals dwell and co-constitute this particular place in diverse ways even if their (animalian) meanings will always remain uncertain: from cattle ways of organizing territory (Barbara, Melissa, Yazzey) to Phoebe exploring

how to leave; and from Hilary throwing small mounds of earth, to Polly meeting people and objects at the field perimeter. Following on, these examples also signal the tensions between what humans and cattle consider in or out of place in the field. My rucksack, a cyclist, a pedestrian or blown-in branches cause commotion because they are 'out of place' and do not fit within the spatial ordering of the field that the animals have come to recognize. And even Zoë's absence is felt in the days and weeks following her departure as her grazing group alter taking it in turns to lye, rest, watch, eat.

I want to end this section by thinking through two problematic and unsettling notions that begin to emerge through these time-deepened and immanent modes of dwelling. Firstly, I think it is important to recognize (and reluctantly accept) that although cattle co-constitute this field they will never be equal constituents because their life conditions and spatial arrangements are decided upon by Martin in selecting when and where the herd shall graze. Secondly, and following on, I am left pondering the (dis)connections between the animalian natures of cattle themselves and the surroundings provided and policed for them by humans: how do individual animals 'cope' (or not) with the environment provided for them? This question becomes more vexing as one speculates upon why Phoebe left the field or how Zoë will adapt to living with a new herd. Extrapolating further, how might their habituation in this field lead cattle to acquire an "impoverished repertoire of sociability, movement and life skills" (Whatmore and Thorne 2000:202) compared to nomadic cattle and/or their 'wild' progenitors? In posing this question it is not my intention to return to wild *bos* (see also parts 1.13, 1.4 and 2.1), but rather to suggest that though the habits and habitats of cattle continue to be socially constructed so that they necessarily fit within certain spaces and play-out certain roles so as to meet 'human' expectations (after Yarwood and Evans 1998:137 see also Anderson 1997; Philo 1995; Wolch et al, 1995), cattle too have particular ways of organizing themselves and interacting in this place that crack through this impasse. Ultimately, what I am suggesting then is that humans need to be attentive to animalian ways of living that cattle use in understanding their place within the (field) world. In the next section I continue to unpack the relationship between these different modes of dwelling and the (ethically) unsettling notions that they raise, by examining an agricultural show.

5.2 Show

Figure 5.6: Staging an agricultural event

(A series of images from agricultural shows held in the U.K between May 2002 and December 2004)

> We aim to train young farmers to carry this image in their mind of the perfect animal - or whatever animal - and to assess what they have in front of them against that template (William, cattle judge at The Royal Bath and West show, Thursday 30 May 2002).

Work across the social sciences has focused on the changing geographies and spatialities of human-animal relations at agricultural shows and events (see Holloway 2004a 2004b 2005 see also Yarwood and Evans 1998), identifying instances of confinement, simulated ecosystems and environments and how animals become tied to discourses of progress and improvement, education and entertainment, production and consumption that enact a place of farming/public imagination binary. On the one hand, the images above (figure 5.6), at first glance, appear to fit within the instances of boundary-making and boundary-marking being alluded to. On the other hand, it is my intention in what follows to take individual animals that journey to and are exhibited at agricultural events as a departure point. This is to evoke different 'somethings' of the animal (after Holloway 2005), where cattle exceed their physical and imaginative presences and representations (on an information board, floor plan, pen and show ring) thus enabling one to consider the ways in which cattle co-constitute an agricultural show in more animalian ways.

Departure

A blue lorry backs into the yard and the ramp is lowered.
Four cows (Margaret, Jessica, Barbara and Melissa) are waiting in the shed.
"Come on girl", Martin walks to the side of Margaret, slapping her on the back,
Margaret moves quickly towards the wooden ramp covered in straw.
Dave, carrying a long black stick, begins hitting Barbara and Melissa on their backs...all the while Martin making a brrrrrrrrrrh sound that breaks into a high pitched whistle.
Martin and Dave walk behind the cows.
As Jessica, Barbara and Melissa approach the ramp Martin begins to make (up and down) gesturing motions with his arms ..."go on" [shouting this several times].
The collective sound of hooves on the wooden ramp, Margaret almost at the top twisting her body slightly and then entering - clip clop noises of footsteps across the lorry floor.
Dave hitting Jessica and Melissa across their backs again.
...Martin and Dave putting their combined body weight against Jessica, forcing her to enter the lorry.

Fieldwork notes, Tuesday 27 May 2003.

The performance here, in this written account, contains fragments of the journey taken so that Margaret, Barbara, Melissa and Jessica connect with a non-farming public. Amid promotional literature that depicts the appearance of cattle, and farm animals more generally, in terms of "a great west country event that brings together the best of agriculture and country life", "outstanding displays of cattle", "splendid livestock displays" (The Royal Bath and West of England Society promotional literature 2002-2004) and "the show's renowned livestock competitions are the focal point of quality meat production at its highest level" (Royal Smithfield Show 2002), the moment above points a way through these advertising slogans that in turn represent the show according to a spatial layout ('cattle lines', figure 5.6) and timetabling of classes. For it is here - in the yard at Folly Farm - that animals begin to constitute the show before they have even left this place. And it is here too that cattle unsettle how the organizers would like to promote farming (issues relating to animal welfare, food production, new technologies and products) amid the actual, living 'realities' surrounding the animals participation in the show: Martin and Dave shouting and hitting; Margaret's body-twist; Jessica's reluctance to leave the ramp. In this way, the description presented here is a reflective stance that sends the spectator elsewhere, towards a theatrical apparatus that is off-stage and unscripted, to more intimate contours of possibility that exceed a representational gaze. I am gesturing here towards a reconfigured notion of what it means to describe an agricultural show: not, then, as an institution or spectacle for displaying 'perfect animals' (see also Holloway 2004b 2005) but to disrupt such boundaries. And it is through such a disruption that one is able to contemplate the journey being undertaken by Barbara, Melissa, Jessica and Margaret as the lorry departs - up the lane, towards an empty windswept shed and barren, concrete stalls. Moreover, one might query how, if at all, Margaret, Barbara, Melissa and Jessica's absences are felt within the herd and grazing groups

that they are leaving behind (part 5.1). And importantly, upon their arrival, what might cattle experiences of these events be and how might they be seen as co-constituents of this place?

In the shed with Margaret, Barbara (and other cattle)

"When they come [to an agricultural show] it takes them a day or two to get used to it" (Martin, dairy farmer at Folly Farm, Wednesday 29 May 2002).

...

(7.00am) tranquillity nestled by sporadic low pitched moos, the rustling of straw...suddenly interrupted by grating metal on the ground outside - a cow pauses and then continues eating straw, another cow begins licking the head of the cow lying beside her...the chain around Margaret's neck making a clinking sound as it hits the metal bars in front of her, reverberating through the shed; moisture and condensation coming out of Barbara's nose...as I walk past the stalls there's a strong smell of dried urine and faeces, stale straw, and the scent of raw bodies - skin, hair...two people walk past collecting buckets, the animals continue to lye and rest...in a pen near the entrance two calves are making sudden movements - running back and forth alongside each other - flinging strands of straw everywhere.

Fieldwork notes, Friday 31 May 2002.

Martin and Sue have participated in agricultural shows over the past five years; and although Margaret, Barbara and Melissa are being taken to an event for the second time it is Jessica's first appearance. "Getting used to the it" - being at the show - requires the animals to be able to cope with their separation from the herd and living in a different environment for a week, where they will be milked at different times and individually, kept indoors for prolonged periods of the time, no longer able to move freely (in a field or yard) as they are tied and chained. For Jessica this 'adjustment' becomes fraught as Martin notes how she is quiet, withdrawn, and has lost her appetite. Martin draws upon his knowledge of the everyday habits and behaviours of individual cattle to support the animal's coping mechanisms - reassuring Jessica by putting his chair, cool box and other belongings nearest her stall, ensuring that he or Sue can sit with her during opening times; and in always feeding Margaret first and from the same bucket. As the week progresses the moment in the shed depicted above begins to describe some of the ways in which the animals become attuned to the environment. These notes thus provide an important starting point in considering how animals deal with their absence from Folly Farm and co-constitute the shed in momentary-immanent ways: from the sounds that they make, to the ways in which they interact with each other; and from their use of materials and objects (playing with straw, a swinging chain hitting metal bars) to their bodily substances (urine, faeces, phlegm); in these ways cattle mark and make their presence felt in this place. But this inhabitation in the shed extends to other part of the show. Consider the following empirical instance:

Figure 5.7: Bentley

(A series of photographs taken on Monday 25 November 2002)

Preparing Bentley

Bentley is standing on an elevated wooden floor with six other cows, tied to a metal fence with a fraying cream rope around her head and neck... gluey phlegm dripping from her nose and mouth she is surrounded by bales of straw and a yellow container of sprays, polishes, brushes - she stares directly at me, I stroke the side of her face and talk with her.

...

A few minutes later Phil [Bentley's keeper] appears with a bucket of cold water... cleaning Bentley's bottom, lifting her tail and brushing downwards...dragging a long blue hosepipe over, switching it on, air blowing out - drying Bentley as best he can as she swishes her tail forcefully up and down, across and back hitting and blocking the pipe...Phil starting at the legs, moving on to the right side of her body, and working his way up, Bentley all the while pinning her ears back, unable to twist her head round completely.

...brushing her tail with a metal comb, it's knotty...spreading the ends out into a fan shape as Bentley lifts her head up as far up as the rope permits, Phil carries on with the combing, Bentley's eyes bulging, moving her right leg back.

...

Phil delves into the yellow container and comes back with a spray bottle (a mixture of water and Limoshine) and a canister of shaving foam; placing the foam in the palms of his hands and then applying it all over Bentley's body, primarily where sand and dirt are caked on - Bentley striking him with her tail.

...

"We buy them when they're young, put a rope on them and start walking them round so they get used to it...there's a lot of work involved in getting her up to show standard"
(Phil, beef farmer, Monday 25 November 2002).

...

Phil collects the hose again, is about to activate the dryer when Bentley poos everywhere - her faeces deposited on the hose itself, raised wooden floor and concrete ground.
Phil stands and waits...then starts cleaning her bottom and tail again.
The shaving foam on Bentley's body has dissolved into her skin... Phil collects a large wide toothed metal comb and makes upward strokes on Bentley's neck and face then blows air all over her body.
Now on his knees, Phil cleans Bentley's feet, a sharp implement with metal point scraping dirt from her hooves.
Standing up again, Bentley is dry so Phil collects a large shaver and moves in closer, inspecting the hair on the side and top of her body, combing and then shaving it so that it smoothly sits at the same level.

...

[An official makes his way to the preparation area to inform Phil that the class will be held later than publicized].
With this extra time Phil decides to repeat this process of washing, cleaning, drying, foaming, combing, drying and shaving.

...

A cow walks past the metal barrier; Bentley reaches out and touches the back of her ear.

Fieldwork notes, Monday 25 November 2002.

For all her training over the last six months - a rope tied to her as she is guided round the farm - and Phil's attention to detail as he washes, cleans, dries and then meticulously shaves and polishes her; it is Bentley, through the use of her tail, pinning her ears back, her bulging eyes, moving her body and legs as much as possible, depositing faeces everywhere, reaching out to touch another cow; that

signal her wilful ways of occupying this place that move beyond the routines of standing still and compliance that Phil anticipates (figure 5.7).

Sand pit

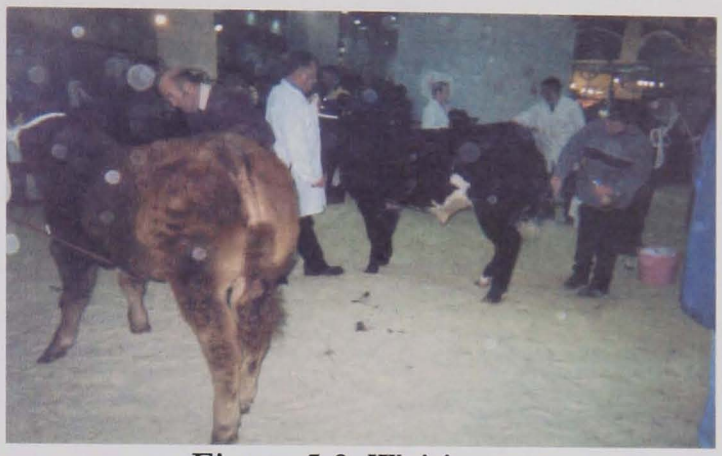


Figure 5.8: Waiting area

"Don't move" - Phil whispers to Bentley as he replaces the old cream rope with a clean white one.
We are now waiting in the 'sand pit', a small area beside the entrance to the main show ring, the sand itself littered with poo, wee and pieces of straw…Phil has time to go through his bucket, taking out the limoshine spray and comb…collecting a stick, moving it backwards and forwards across Bentley's underbelly.
…a cow alongside her having a piece of tinsel draped around her neck, being sprayed with glitter.
…the animals and handlers enter the ring.

Fieldwork notes, and photograph taken, Monday 25 November 2002.

Here the sand is marked by traces of urine, faeces, straw and grooming residues that have accumulated over the course of a morning as cattle have been led from stalls and the preparation area. And it is here that handlers make their final checks - cleaning, applying products so that animals shine and sparkle - before they are visually inspected and judged. However, upon entering the show ring with the choreographed routines of walking in a circle and standing in line (the training), and the two hours that it has taken Phil to prepare Bentley, become open to uncertainty as animals modify what takes place:

Figure 5.9: Show ring

(A series of photographs taken at agricultural shows in the U.K between June 2002 and June 2004).

For all the foresight, these images (figure 5.9) orientate one towards the ways in which cattle have their own natures and ways of being in this place that makes their conformity during classes tentative and doubtful. Here, handlers become heedful of an animal's body size, strength and temperament as cattle alter their pace, will not stand still or form a line, and collide with metal barriers designed to separate them from the viewing public.

Visiting time

Figure 5.10: Public viewing

(11.00am) back in the shed with Margaret and Barbara; Margaret standing, Barbara lying. Fresh straw everywhere, no clear partition between animal stalls and human walkways; farmers, visitors and cattle mingling…people in overalls stood at the entrance and midway along the shed, sweeping away animal urine and faeces as soon as it drops to the floor…continual muffling noise - mooing…bantering as rosettes and certificates are displayed above winning animals.

Fieldwork notes, and photograph taken, Friday 31 May 2002.

From Martin and Phil's wariness regarding how their animals might perform in the ring, back in the shed this unease dissipates as animals are chained so that they are only able to lye down, stand up and hardly move; monitored and checked by other farmers and cattle stewards. On the one hand,

when the shed is open to the public the layout ensures that animals and people remain in their proper place (walkways/stalls), but this can evoke unsettling relationships between animal (cattle) bodies and human (visitor) consumption of animal products (figure 5.10). In some instances these connections are encouraged as Martin displays information boards on dairy farming alongside Margaret, Melissa, Barbara and Jessica's stalls; but in other instances these connections become concealed, for Bentley is not identified as beef cow (see part 1.24; Holloway 2005). On the other hand, amid this 'mingling' as humans and animals share space, other than by their sheer presence, the form of animal exhibition shifts so that interactions between cattle and visitors become devoid of the richness that I encountered when in the shed with the animals before and after opening time. I am left wondering, therefore, what kinds of human-cattle connections are made possible here and what the impacts of these interactions on individual animals might be. I am thinking here of what Margaret, Melissa, Barbara, but particularly Jessica and Bentley's, experiences of noisy crowds, the physiological and psychological effects (stress, disorientation, herd bonding, unfamiliar environment) might be compared to living on Folly Farm and grazing in fields (part 5.1). For example, the way in which Bentley stared at me and as we stood alongside one another, and my observations of cattle interactions earlier that morning, bares no relation to the way in which these animals interact with each other and people during visiting times; their sounds are obscured by screaming children, jubilant farmers; the animals themselves lying or standing still; urine and faeces swept up before it has a chance to settle.[43]

Figure 5.11 'comfy cows pledge takes Red Tractor prize'

(Farmers Weekly, Friday 3 December 2004:12)

[43] In a different context, a number of studies in veterinary medicine have concluded that the presence of visitors in front of zoo enclosures can disrupt animal behaviour (for examples do see Hosey 2000; Kreger and Mench 1995; Maple et al, 1995).

This picture (figure 5.11) is of a dairy farmer receiving a prize (a tractor) for winning the National Farmers Union (NFU) red tractor competition, the entry pledging: 'I promise to treat each of my cows as she deserves: molly-cuddled, manicured and milked'. And it is amid this competition that one begins to grasp the ways in which the everyday lives of cattle are being portrayed through the exhibitive space of the show. In the first instance, agricultural events are designed to reconnect producers and consumers as Martin and Phil reassure the viewing public that Margaret, Melissa, Jessica, Barbara and Bentley are being looked after, thus stressing the need to support British agriculture. In the second instance, the pastoral rendition of life on a farm and of clean, healthy animals is, perhaps, a far cry from the 'realities' of contemporary farming practices. Collectively, the NFU competition slogan and the choreographed management of bodies in place (shed, preparation area, and show ring) merely succeed in giving humans a central role to play as cattle bodies become appropriated for human purposes that leads their (animalian) presences and experiences of the show to remain underdeveloped.

Above all, I have explored the agencies of cattle as they (un/re)perform in this setting, instances where they do not comply with and disturb human expectations: through their markings (urine, faeces, hoof prints), bodily postures (standing, lying) and directed gestures (swishing tail, moo, touching and interacting with each other). And it is by drawing attention to some of the things that animals do in this place that one can begin to contemplate the ethical relations unfolding at the show. I am thinking here, in particular, of a series of human orderings and interventions in cattle lives: from the spatial layout (stalls) and environment (bedding materials, feed, artificial light); to the training (ropes, sticks) and preparation (the use of drugs to calm and/or sedate an animal, shaving foam, glitter); what might the impact of these actions be on the animals themselves as Margaret, Barbara, Melissa and Jessica depart Folly Farm and Bentley leaves her smallholding?

Discussion in the chapter thus far has focused on individual cattle as bodies in place, situating encounters on the farm (field) and agricultural show (shed/preparation area/ring). Each of these sections foregrounds troubling tensions between animal natures and ways of being-in-the-world and the human habitats and surroundings constructed for them. But the explorations here also endeavour to (re)think how humans dominate and humble another being (after Tuan 1984:107) by pointing towards how cattle are co-constituents in these places, in time-deepened and immanent-momentary ways, that complicate assumptions of their tame, denatured and subjugated animality. In the sections that follow I want to make a shift to configure other spatial formations that sit alongside this emphasis on bodies in place, to trace how cattle become abstracted and caught up in far reaching material assemblages (virtual spatialities). In part 5.3 I follow some of the laboratory practices and written documents through which animal medicines are researched, developed and licensed in the U.K. Moving on, in part 5.4 I describe an online cattle tracing register designed to

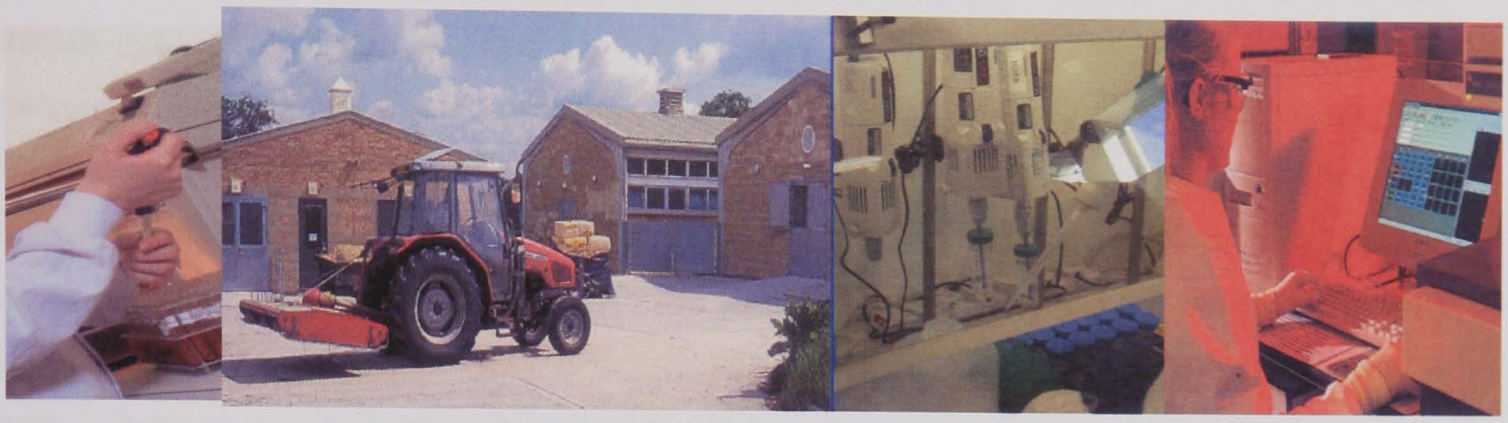
record information on the birth and movement of cattle in Great Britain. My intention in so doing is to mimic how cattle are coming and going between fields and laboratories, between farms and government offices. Thus, as bodies in place cattle can now be seen as:

> permanently in a state of enunciation, between addresses, always deferred. Places are 'stages of intensity', traces of movement, speed and circulation... No configuration of time-space can be seen as bounded. Each is instantly compromised by the fact that what is outside can also be inside (Thrift 1996:289-290).

Moreover, I take-up Hetherington and Lee's (2000) injunction of blank figures to attend to how individual cattle might be seen as figures of spacing, at certain moments coming out of the shadows to bring unsettling and transformative effects in laboratories and legislature (see also part 2.3). The very crucial manoeuvre being made here is to open out "the fabric of space allowing new, yet unfixed and more partial, perspectives to come into view" (Hetherington 1997a:214).

5.3 Laboratory

Figure 5.12: Siting veterinary medicines research



(images courtesy of commercial department, pharmaceutical company K)

The average brain to bottle time now exceeds ten years. The average success rate is now 1 in 10,000. Two years are needed for registration. This leaves only eight years during which a product can be marketed under patent protection. Any delay in the registration process reduces our return on investment…This, in turn, leaves us with less to reinvest in products (Lucy, communications team representing the manufacturers of animal medicines, organization L, Tuesday 10 June 2003).

I'm at a university research laboratory, but for the procession of cars and milling of students you may not notice it. Off a slip road, the facility appears as any other set of uniform buildings on the campus. As I drive up to the entrance the scale of the place is overwhelming…several brick buildings surrounded by high barbed wire fencing, security cameras, warning signs about trespassing and a guard standing in a sentry box. I have to offer proof of identity, sign in, have my picture taken and wait for my visitor's badge. I'm given a map, which is a sheet of white paper with what appear to be roads and buildings represented by straight lines and square blocks, all labelled numerically. Once through the barrier I negotiate my way to building 8.

…

I'm meet by Simon, our introductory conversation interrupted by a telephone call. Answering the phone "those are the studies we need to do to fit in with our timescale…yeh…we'll need another consignment, about 30, 40 should do it". Simon decides to take me on a tour of the facility. Wandering round we discuss his telephone conversation. The consignment, I discover, consist of rats to be used for drug trials before the product is tested on the species for which it was intended. Walking on…suddenly I'm startled, for amid all the bricks and mortar a farm appears. There's a large shed with a corrugated roof and an open grass pen with eight Friesian cows grazing. Simon points out that they are "target species", here to have drug tests conducted on them, experiments that can have an 80% mortality rate in the initial stages.

…

Moving on, we enter building 12. I wash my hands, put on a white lab coat and place yellow sleeves over my shoes. There are a series of rooms off a long corridor. Some of the rooms are empty while others have small groups of people working in them. We enter one of the rooms. There's a lady inside testing a batch of drugs, wearing a lab coat and rubber gloves, she's working behind a glass screen. There's a long measuring straw mostly filled with orange liquid and partly filled with a clear solution. It's being fed into what looks like a plastic bottle with a blue dial. Next to this is another clear bottle with darker orange fluid.

Tour of research facilities with Simon, research and development team, pharmaceutical company G, Wednesday 19 February 2003.

This quote, the images, and description of setting, indicate how the development of animal medicines is a lengthy and extensive process. In the U.K the animal medicines market is valued at £389 million and divided into three main segments: preventative medicines that strive to stop healthy animals from becoming sick (£229.70 million), therapeutic medicines used to treat sick animals (£120.35 million), and other medicinal treatments such as digestive enhancers, analgesics, euthanasia products and dietary supplements (£38.95 million) (all figures for 2002, courtesy of organization L). In this section of the chapter I want to sketch the practices and processes involved in discovering, researching, formulating and licensing animal medicines for cattle at three different stages: pre-clinical and clinical, registration, and post-authorization. In addition I want to oscillate between ecological complexes of bodies in place (part 5.1) and the more virtual spatialities that animals begin to acquire during medicines research.

The discovery and testing of any medicinal product involves the use of animals at some point, usually during pre-clinical and clinical stages, in order to investigate a disease or ailment, to look at the action of a given product in the animal, and to review a product's performance in a 'real life' situation. Indeed, before a veterinary medicine can be licensed the regulatory authorities in the U.K, and at a European level, require trials to be done in the animal species for which the drug is intended. The empirical observations cited above bear witness to how animals become potent icons in the processes and value of medicines research. It is here that one begins to grasp how cattle are transformed into laboratory animals, as something made to stand in for data and scientific analysis: rat/consignment, cow/target species. These interventions lead the eight Friesians that I encountered on my tour to be viewed as many different things at once: as a piece of laboratory equipment, tool for eradicating illness and disease, and charismatic farm animal.

Configuring cattle as part of this scientific set-up and, in particular, investigating the impact of a drug profile on their bodies is governed by 'the animal test certificate regulations 1996' and 'the animals' scientific procedure act 1986'. For pharmaceutical company G to be able to experiment on the eight cows I came across during my visit they must apply for an 'animal test certificate'. If an application is successful there are two stages to experimenting with the drug profile. The first level of testing is on 'small animals' - *"the consignment"* - or what I discovered were rats on my tour. At these initial stages scientists are looking to confirm that the drug works, that it is safe, and to monitor the serological responses of the animals being experimented on (figure 5.12). Once these investigations have been conducted, and any redefinition of the drug profile has been completed, a second level of testing takes place and this involves using the product on the species for which its use is intended. When experimenting on cattle at least five test subjects are deemed necessary (pharmaceutical company G). The eight cows at the laboratory during my visit were recruited from two sources: local farms and bought at a market.

It is in reaching the laboratory site that these eight cows are fabricated into something else, becoming known as "target species", no longer intertwined with farming practices and the routines of milking in specific places (Folly Farm) but circulating as boundary objects and exemplars of sameness (after Birke 1994) that can be experimented on to make generalizations about all species of cattle. To make this transition, and 'participate' in clinical trials, the animals have to be acclimatized. That is, when they arrive at the laboratory they are kept together for a period of seven days to allow them to adjust to being part of a different grouping and to reduce the level of stress that they may experience when kept indoors, individually in cubicles. It is the responsibility of the animal services team and veterinarians located in building 11 at company G (next to the farm site, figure 5.12) for preparing the animals for periods of confinement, administering experimental drugs, monitoring the results and disposing of the animals once the trial has ended. This information is recorded on monitoring forms for each test subject. In this way, the team adopt a language where terms such as "cow", "cattle" or "livestock" become replaced with "organism" and "subject profile":

> scientific understanding of the animal and the animal's husbandry relies ultimately on a conception of the animal as animal... But these features of animalness must not enter written reports, which simplify and mathematicize (Birke 2003:216).

As cattle become part of the laboratory apparatus at company G, the ways in which these cows are living out their lives are worlds-apart from that of cattle at Folly Farm. For example, wearing overalls, washing her hands and taking off her surgical gloves, a member of staff leaving the laboratory explains how she has tested a drug:

> a subcutaneous injection... using a sterile needle, injecting the loose skin on the side of the neck... observing ascetic precautions
> (Louise, animal services team, pharmaceutical company G, Wednesday 19 February 2003).

The artificial living conditions in which the animals now dwell lack the environmental stimuli and ecological richness of being in a field on Folly Farm (part 5.1) as the animals are provided with few opportunities to form relations with plants, other animals and humans. Instead, there are protocols to be followed governing how drugs should be administered - the washing of hands and wearing of gloves - that limit the sensations of touching and connecting with the cows. And it is through the practice of acclimatization, and the terminologies and vocabularies being used, that it may appear unlikely that cattle in the laboratory are bestowed with any agency during trials. However, and on this matter of agency, one needs to attend to how individual animals co-constitute clinical research.

In the first instance cattle become 'bodies in place' in occupying the farm accommodation and individual cubicles provided for them. Here their bodies are dissected into muscles and tissues that are monitored for the absorption, tolerance, chemical and physiological effects of the drugs; through the collection and analysis of their serum, blood and skin (figure 5.12). Following on, cattle inhabit

more virtual spatialities as the samples that are taken are processed and written up to make generalizations about the efficacy, tolerance and immunogenicity of the product (figure 5.12), eventually finding their way into the 'tolerance studies' section of the dossier submitted to the licensing agency. As bodies in place and virtual data, then, one needs to be attentive to how individual cattle can deflect the course of human design and produce results other than those predicted in the drug profile. For example, a member of the animal services team explains how:

> it [the cow] may cause a temporary nodule at the site of the injection, it may fail to respond to the product as a result of immunological incompetence... occasionally hypersensitivity reactions occur
> (Jon, animal services team, pharmaceutical company G, Wednesday 19 February 2003).

After the medication has been administered there is a fourteen day observation period when staff from the animal services team will look for post-clinical signs including becoming cold to the touch, high temperatures and blood stained faeces. And it is here, amid the standardization of testing, that individual cattle might raise uncertainties about the pharmacology of the product being tested. This is:

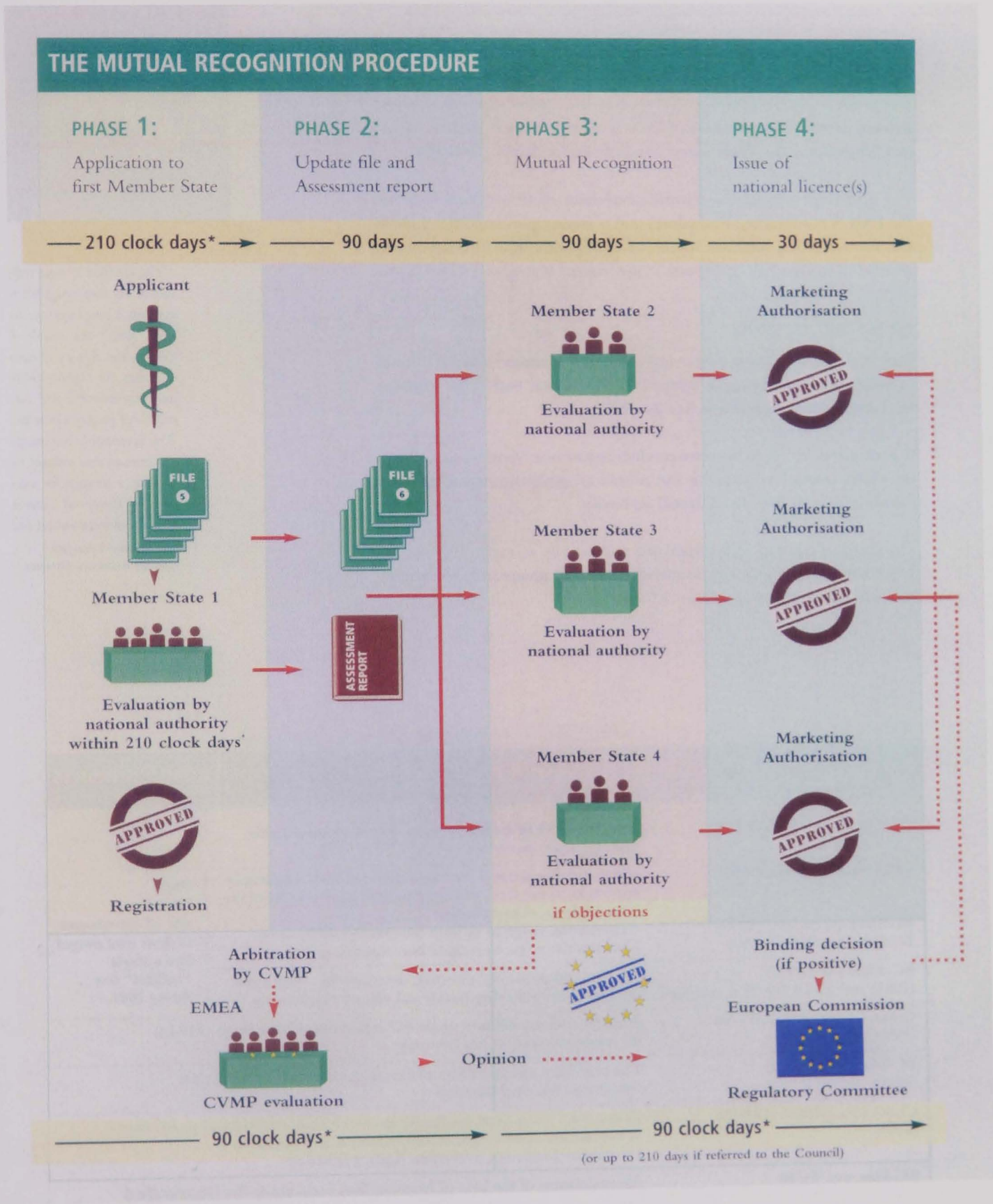
> not only a specific and indirect way of moving in space, but also a type of light and temporary stitch, used to hold materials of social space together in some semblance of order during the process of manufacture... it is to make changes and to bring novelty and uncertainty (Hetherington and Lee 2000:180).

Together this (material and virtual) biological data form a series of files - termed the "dossier" or "data file": a standard format containing all the information needed for the licensing authority to assess a product's safety, quality and efficacy. Thus, after the pre-clinical and clinical stages of the drug profile have been completed, the results and analysis are assembled into a dossier that is submitted to the government department responsible for authorizing veterinary products.

I'm in the basement of a government office in London...surrounded by shelves and shelves of files, all catalogued like some kind of library. There's a huge table in front of me where more files are stacked four volumes high waiting to be processed. I'm with Emily, a senior veterinary advisor, who's responsible for part 4 of these dossiers that have been submitted by the drug companies. It's her job to check that the product seeking a licence can safely be used on animals and complies with European and international clinical and technical guidelines. She opens up one of the files on the table and describes the 'pre-clinical' and 'clinical' division of the dossier. She's reading the submission to see how the product is intended to work in order to determine it's "pharmacological effects", "the absorption, distribution, metabolism, and excretion of the product once administered to the animal", the dosage regime and what may happen if this recommended dosage is exceeded, this section labelled "tolerance" and consisting of "dose titration studies", "dose confirmation studies" and "field trials"...Finally there's also an expert report. It is intended to summarize part 4 and has lots of tables recording the animals treatment regime and duration. Emily informs me that it's unusual for her or other colleagues to check drug results, to dispute company results, for most of the pharmacokinetic studies in target animal species are recorded in "pharmacopias" and can be accessed through bibliographic searches. Her overriding concerns, she tells me, are to meet the 90 day deadline for processing the application and, as the drug in this file is intended for a "food producing user", ultimately to protect the consumer.

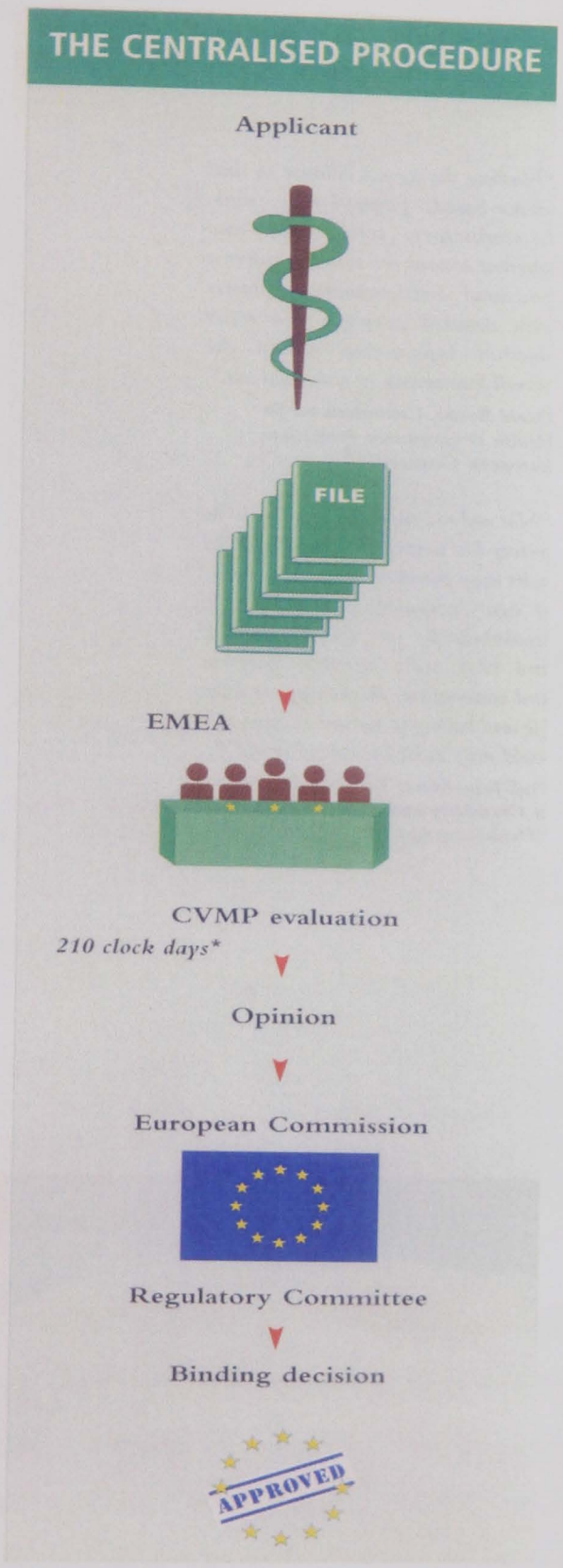
Tour of administration facilities with Emily, veterinary assessment team,
government office 2, Friday 8 August 2003.

Figure 5.13: Licensing veterinary medicines in multiple European states



(FEDESA 2002:14)

Figure 5.14: European mechanism for authorizing veterinary medicines



(FEDESA 2002:15)

Three registration procedures for veterinary medicines are available within the European Union: a national procedure where a pharmaceutical company obtains a single licence for their product in one member state, a mutual recognition procedure where the company is approved licences in several member states (figure 5.13) and a centralized procedure where the company acquire a single pan-European licence (figure 5.14) (FEDESA 2002:8). The licensing route that a company decides upon varies according to its marketing target - the species of animal for which the product is intended,

where these animals are located, product formulation, production methods and so on. The comments above attend to the culmination of this decision-making process as Emily finds herself surrounded by piles of dossiers (pertinent to all three routes) awaiting assessment within the defined 210 clock days.

Emily is responsible for appraising the fourth part of the dossier, 'target species safety and efficacy'. This section is designed to evaluate the pre-clinical and clinical effects of the drugs on animals and Emily's assessment of this information is governed through legislature set out by the Committee for Veterinary Medicine Products (CVMP) and the International Harmonization of Technical Requirements for Registering Veterinary Products (VICH). On the one hand, these guidelines are concerned with assessing the impact of the product on the animal:

> How does it work, what are the desired effects in animals…is it going to be safe when used in the field, in real life? There needs to be an inbuilt safety margin…five times the recommended dose…who is going to administer the product and how?
> (Emily, veterinary assessment team, Monday 14 July 2003).

On the other hand, cattle become a collective as the possible impact of the product on the animals themselves become peripheral and tied up with the real and imagined risks that they may pose to humans who consume animal products:

> Consumer safety is our main priority…you have to build in a reasonable safety margin for consumers…sometimes companies are uncertain how a product works, that's fine if they explain it's desired effects and what it does…if there are lumps and swelling, no worse than that in tolerance tests we deem it okay to be used in animal species
> (Emily, veterinary assessment team, Monday 14 July 2003).

In other words, cattle become branded as a 'carcass' during the assessment procedure with human (consumers) needing protection from any disruption to the colonization barrier. Thus, in the legislature cattle are referenced as "food producing users" and corporeally fragmented into "edible tissues" (muscle, liver, kidney, fat and skin) and "edible products" (milk and meat). In this way the dossiers submitted by the pharmaceutical companies must contain "tolerance data" that present information on how the drug is absorbed and excreted by the animal's body so that 'acceptable daily intake' (ADI) figures can be compiled. ADI is expressed as:

Acceptable Daily Intake

$$\frac{\text{MIC} \times \text{CF2} \times \text{mass of colonic contents (220g)}}{\text{Fraction of dose available for micro-organisms}} \times 60\text{kg human adult}$$

This formula is based upon a theorization of the maximum exposure to a drug that an individual animal will experience. Through this legislature, the tolerance data contained in the dossier and ADI figures, cattle become encountered as a 'food basket':

> The daily food basket used for consumption calculation is comprised of 0.500kg of meat plus 1.500 kg milk... these estimations also take into account the residue concentration in the food commodities derived from the pattern of residue depletion of the substance in the animal
> (Emily, veterinary assessment team, government department 2, Monday 14 July 2003).

In licensing veterinary products for cattle, then, consumer safety becomes paramount with withdrawal periods (WP) set to ensure that residue levels will be below the MRL before an animal treated with the product can enter the food chain.

Amid the 210 day clock, and ADI and WP figures, at what point in this legislative process might cattle unsettle these cartographies of governance? Through Emily's assessment of a dossier cattle become a virtual presence in co-constituting a series of tables and charts inserted into 'tolerance data' section. This virtual presence extends to pharmacopoeias (an existing literature on active ingredients that Emily will consult to double-check information provided by pharmaceutical companies). And it is in these virtual spaces that elements of uncertainty can elucidate alternative understandings of cattle. I am thinking here of how cattle have the potential ability to breach the colonization barrier - Emily describing how ADI figures "refer to a single cow when, in practice, it is unusual to consume milk coming from only one cow"; how drugs are absorbed and excreted in individual cattle may vary; and human consumption of edible tissues and products will also differ. Thus, cattle emerge as:

> figures between space, communicators that pass between categories of difference as if they were not there... facilitators of new possibilities in the connections within the recognized order of things (Hetherington and Lee 2000:171).

This testimony, and dormant presence of cattle therein, has the potential to unravel as assumptions about the materiality of (cattle) bodies and (human) consumption practices (300g meat and 1.5 litres of milk per person per day) open out to new alignments.

Figure 5.15: Virus and bacteria production

(image courtesy of commercial department, pharmaceutical company K).

> The company must inform the authorities immediately if any serious suspected adverse reaction is reported. It must also submit regular summary reports of all recorded incidents for examination, even if these incidents are only suspected to be related to the use of the product
> (Lucy, communications team representing the manufacturers of animal medicines, organization L, Tuesday 10 June 2003).

If Emily and the assessors responsible for other sections of the dossier (administrative data, quality and safety) agree that the product is safe for the treated animal, consumer and environment; after the 210 day timetable the product will be granted a 'marketing authorization'. This means that a pharmaceutical company is permitted to sell the product. Once this product is on the market the licensing authority administer a further scheme to monitor reports of any reactions in animals or humans. The purpose of this scheme is to audit trends in reported suspected reactions and, where necessary, to take follow-up action with the company holding the marketing authorization. An adverse reaction has been defined as:

> a reaction in an animal which is harmful and unintended and which occurs at doses normally used in animals for the prophylaxis, diagnosis or treatment of disease or the modification of physiological function (Article 42b Directive 81/851, EMEA 2003).

I have indicated previously how individual cattle can respond to drugs in unanticipated ways - in the laboratory ("a temporary nodule at the site of the injection") and within dossiers - for cattle have the potential ability to breach the colonization barrier amid reassurances employed through ADI and WP figures. If a person (animal keeper, veterinarian or pharmaceutical company employee, for example) wishes to report an animal's harmful reaction to a drug they are required to fill in a yellow form that asks for information including the name of the product, reasons for use, when the drug was administered and by whom, the duration of treatment, and the reaction that occurred. The animal is identified on this form according to its age, breed, species, sex, weight and (food

producing) role. The completed form is sent to the adverse reactions team at government office 2 who input this information onto the 'Tigress database'. After an investigation, the yellow form becomes coded according to an ABON system: where A concludes that the reaction was a direct result of the drug used, B and O indicate that the reaction was possibly related to the drug but that the animal was being treated with more than one product at the same time therefore a definitive link cannot be made, and N denotes that the reaction was not related to the drug (government office 2). Here cattle become intertwined in electronic coding and tabular summaries, as individual animals are allotted a position within a computerized system that can lead them to challenge and reconfigure scientific understandings:

> The blank comes into view within established ways of knowing but within that knowledge it makes visible things that would otherwise be unseen and in so doing alters the possibility of vision by allowing speech to occur about things that would otherwise amount to silence (Hetherington and Lee 2000:179-180).

This section of the chapter, in drawing attention to human practices towards, and the spaces inhabited by, animals in scientific research chimes with work across the social sciences in addressing the overlapping and contradictory meanings attached to laboratory animals (do see Arluke 1994; Lynch 1988; Phillips 1994). On the one hand, cattle make a symbolic transition from market or farm to laboratory cubicle; from 'cow' to 'target species' and 'food basket'; from dossier or data file to 210 day clock; and from withdrawal periods to an ABON code. And yet, rather than remain solely concerned with how cattle are vacuumed into this representational set-up of experimentation, documentation and monitoring; I have sought to demonstrate some of the insights to be gained from exploring the lives of individual animals - 8 Friesian cows - at (pre)clinical, registration and post-authorization stages. Thus, the narratives here have much to say in relation to Shapiro's (2002) essay on the role of the laboratory rat. In this piece Shapiro (2002) notes how scientific research de-individuates, de-animalizes and de-speciates creatures in ways that play down their sentience and consciousness. And it is this movement towards individual cattle as both bodies in place and inhabiting virtual spatialities that one can begin to think through the animalness of cattle in disturbing and unsettling human orderings. The call here is two-fold. In the first instance this is to encounter how cattle fail to digest, absorb and respond to medicines and question scientific discourses - the granting of a marketing authorization or online system for classifying reactions. In the second instance, by making visible the invisible - this gap between the representational set up and individual cattle - begins to enable humans to unravel the animalness of cattle in contemplating their 'recruitment' 'treatment' '(artificial) living environment' and well-being at the laboratory site of company G.

In the fourth and final part of the chapter this oscillation between individual bodies in place and their habitation of more virtual spatialities becomes more pronounced. For in what follows I sketch

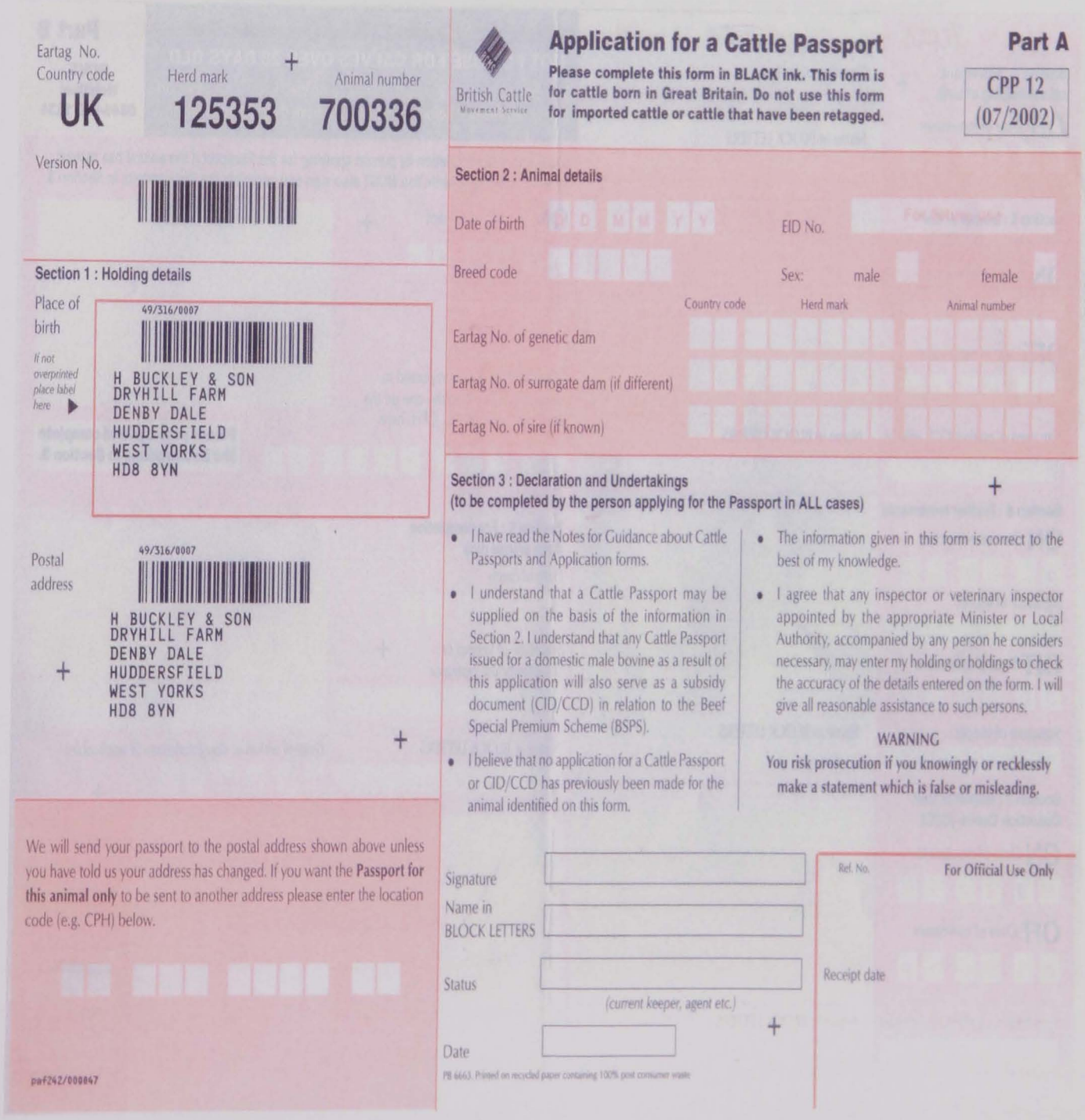
out how cattle births, movements, and deaths are recorded and monitored in Great Britain. And it is through this tracing system, perhaps, that human-cattle relations - and specifically 'cattle as food basket' – become innately conceived.

5.4 Tracing System

UK S372230012[44]

We have one of the most robust systems of tracing animals anywhere in the world (Arnold, industry advisor, The Meat and Livestock Commission, Friday 3 January 2003).

Figure 5.16: Cattle passport application form



Eartag No.
Country code
UK
Herd mark
125353
+
Animal number
700336
Version No.

British Cattle Movement Service

Application for a Cattle Passport

Please complete this form in BLACK ink. This form is for cattle born in Great Britain. Do not use this form for imported cattle or cattle that have been retagged.

Part A

CPP 12
(07/2002)

Section 1 : Holding details

Place of birth

If not overprinted place label here ▶

49/316/0007
H BUCKLEY & SON
DRYHILL FARM
DENBY DALE
HUDDERSFIELD
WEST YORKS
HD8 8YN

Postal address

49/316/0007
H BUCKLEY & SON
DRYHILL FARM
DENBY DALE
HUDDERSFIELD
WEST YORKS
HD8 8YN

We will send your passport to the postal address shown above unless you have told us your address has changed. If you want the **Passport for this animal only** to be sent to another address please enter the location code (e.g. CPH) below.

pwf242/000847

Section 2 : Animal details

Date of birth D D M M Y Y
EID No.
Breed code
Sex: male female

Country code | Herd mark | Animal number

Eartag No. of genetic dam
Eartag No. of surrogate dam (if different)
Eartag No. of sire (if known)

Section 3 : Declaration and Undertakings
(to be completed by the person applying for the Passport in ALL cases)

- I have read the Notes for Guidance about Cattle Passports and Application forms.
- I understand that a Cattle Passport may be supplied on the basis of the information in Section 2. I understand that any Cattle Passport issued for a domestic male bovine as a result of this application will also serve as a subsidy document (CID/CCD) in relation to the Beef Special Premium Scheme (BSPS).
- I believe that no application for a Cattle Passport or CID/CCD has previously been made for the animal identified on this form.
- The information given in this form is correct to the best of my knowledge.
- I agree that any inspector or veterinary inspector appointed by the appropriate Minister or Local Authority, accompanied by any person he considers necessary, may enter my holding or holdings to check the accuracy of the details entered on the form. I will give all reasonable assistance to such persons.

WARNING
You risk prosecution if you knowingly or recklessly make a statement which is false or misleading.

Signature
Name in BLOCK LETTERS
Status
(current keeper, agent etc.)
Date

PB 6663. Printed on recycled paper containing 100% post consumer waste

Ref. No.
For Official Use Only
Receipt date

(document courtesy of government office 5)

[44] This is Margaret's (pictured in figure 3.3) unique animal identity on the cattle tracing system.

The BSE crisis hit in March 1996. As a direct reaction to that cattle passports were introduced from 1 July 1996. The passports that were issued at that time involved the farmer registering the animal's birth, it's dam - so it's genetic other, it's date of birth, it's breed and not registering it's movements... It was then decided that there should be a more joined up approach and movements should be captured... .[the tracing register administered by government office 5] went live on 28 September 1998, and from that point all GB cattle registrations were handled here at this office... with the volume that we process here, and because we're also capturing movements, when we went live we issued application forms based on the ear tags that we had in stock but that hadn't been used... that's a system we run for the ear tag manufacturers and that system ensures the unique identity... The application forms already have the ear tag number written and bar-coded for him and they have the farmers location on the form also bar-coded. So the farmer sends those in, it gets processed and when everything's okay we issue a cheque book style passport
(Annie, corporate projects team, government office 5, Monday 30 June 2003).

Figure 5.17: Cattle passport

SAMPLE
Animal Details
Manylion yr Anifail

Ear tag
Tag clust

SAMPLE

Electronic Id
Id electronig

British Cattle Movement Service
Gwasanaeth Symud Buchod Prydain

Breed / Brid: HOLSTEIN
Sex / Rhyw: FEMALE
Born / Ganwyd: 01 01 1990

Genetic Dam / Mam Enetig: AN EARTAG
Issue / Version: Cyhoeddiad / Fersiwn: 01 01 1900 / 01
Re-Issue / Version: Ailgyhoeddiad / Fersiwn: 01 01 1900 / 02

Page 1 CPP 13 (3/02) SAMPLE

These details are taken from the CTS database. DO NOT write on this page
Defnyddir y manylion hyn ar gyfer cronfa wybodaeth y SOG. PEIDIWCH ag ysgrifennu ar y dudalen hon

Movement History
Hanes Symud

Location Lleoliad	Address Cyfeiriad	Date on Dyddiad cyrraedd	Date off Dyddiad ymadael
99/999/9999	A FARMER BCMS, WORKINGTON, CUMBRIA, UK, CA14 2DD	01 01 1900	

Page 3 CPP 13 (3/02) SAMPLE

STICK on your holding address label, DATE
GLYNWCH label cyfeiriad y daliad, rhowch
Dyddiad a'ch LLOFNOD

1st Movement Summary
Crynodeb Symud 1af

Holding / Daliad

Place your holding address label here
Rhowch label cyfeiriad eich daliad yma

Signature of keeper on receipt of Passport / Llofnod y ceidwad pan dderbynnir Pasport
Signature Llofnod

Date of movement OFF holding / Dyddiad YMADAEL â'r daliad
Signature Llofnod

Holding / Daliad

Place your holding address label here
Rhowch label cyfeiriad eich daliad yma

Date of movement ON holding / Dyddiad CYRRAEDD y daliad
Signature Llofnod

Date of movement OFF holding OR through market / Dyddiad YMADAEL â'r daliad NEU fynd drwy'r farchnad
Signature Llofnod

Page 7 CPP 13 (3/02) SAMPLE

(document courtesy of government office 5)

The cattle tracing system registers all cattle births and deaths, issues cattle passports, and records cattle movement information sent in by farmers, market and slaughterhouse employees and organizers of agricultural events. Introduced in 1996, the system was a precondition for restoring the beef export market post-BSE and derives from European Commission regulations setting out that each member state must have a fully operational database to trace cattle born or imported into their country. At the outset, in 1996, the registration of cattle births and deaths was administered by local agricultural department offices in England, Scotland and Wales. To improve the integrity of the system - it's "joined up approach" - and its prospective adaptation for animal disease control and (European) subsidy payments, government office 5 became responsible for overseeing the

scheme in 1998. From this point, in addition to recording the birth and death of cattle, this department, based in the North of England, also began maintaining files on all cattle movements: between 1998 and 2001 issuing more than 5.5 million passports, tracking in excess of 9 million cattle movements, and costing over £22.6 million annually to operate (figures provided by government office 5). In this way, the system for identifying and registering cattle in Great Britain now encompasses four stages: tagging (an animal is required to wear one tag in each ear containing it's unique identification number - *UK S372230012*); farm recording (of all cattle births, imports, movements and deaths); issuing a passport[45] (a chequebook style document (figure 5.17) that contains specific pages to confirm when an animal moves and dies); and computer registration system (administered by government office 5, holding information on registered cattle in Great Britain on a central database).

In this section of the chapter I want to chronicle how this tracing system consists of complex ethologies of cattle bodies, chequebooks, and movement cards that, on the one hand, are repositories of the 'correct' and 'anticipated' positionings and juxtapositions that allow things about animal births, mobility and deaths to be known; but, and on the other hand, how cattle as figures of spacing (Hetherington and Lee 2000) inhabit (material and virtual) worlds where times and spaces are always in the making (Callon and Law 2004; Thrift 2004c). Moreover, I want to raise questions about the significance of cattle lives and well-being amid this increasingly technologized environment - from the ghastliness of BSE to the unthreatening and optimistic scenario that the database imparts to human consumers in deflecting meaty anxieties. My argument, then, is that when discussing the tracing system one should begin with a counterintuitive move that queries from the start the idea of a passport as an ongoing and final state of traceability thus assuming that the passport itself leads inevitably to closure - that the slaughtered animal entering the food chain can be followed back to birth:

> The more tags a farmer orders the bigger the discount he gets. So farmers will order a number of years worth of tags at once to maximize discounts from the manufacturers... What the system does is if the application for a passport comes in and some of the information is missing, is invalid, we will not issue a passport until that is resolved. Where we tend to have the biggest issue is on the movements... so there's been a lot of work done on that in the last year where we've been tracing the gaps, the missing, and the errors. The first part of the project that I'm working on at the moment is a statement that will get sent out to all cattle keepers telling them the apparent anomalies that we have and asking them to correct those
> (Annie, corporate projects team, government office 5, Monday 30 June 2003).

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[45] Please note: there are four types of identification documents (passports) for cattle. Firstly, cattle born or imported into Great Britain before 1 July 1996 have a certificate of registration (COR or CHR3) which can be used to report movements. These animals do not have passports and nor do government office 5 expect them to have them. Secondly, Margaret (and older members of the herd at Folly Farm) whom Martin registered between 1 July 1996 and 28 September 1998 have an 'old style' (blue and green) passport. Thirdly, cattle registered after 28 September 1998 have a cheque-book style passport (CPP13) (see figure 5.17). Fourthly, any animal that is refused a passport because of late application is provided with a 'notice of registration' (CPP35).

In what follows I want to illuminate some of the apparent 'errors', 'gaps' and 'missing' information held on the tracing register by examining the workings of three administrative centres at government office 5: the post room (where paper documents are sorted and inserted onto the electronic tracing system), passport operations (where anomalies and incorrect information on passports and movement cards are investigated), and deregistration (an inventory of dead animals).

Post room

A small open room with a clear door and x-ray device resembling a gadget that scans hand luggage at airports…once the post is delivered (at 7.00am and 10.30am) it is placed in blue plastic bins and sent through the machine… as it commences x-raying Jennifer recalls an incident of a farmer sending liquid faeces to the office, claiming that one of his cows had eaten her passport - an attempt to avoid paying a £50 replacement fee! Jennifer also telling me that if something more sinister were to arrive (a bomb or anthrax) the room can be completely sealed off - having a separate ventilation system. After x-raying Jennifer and her team sort the mail according to the codes on the exterior of the envelopes: FF (cattle passport), ZA (movement card), AD (specific mail shot), RPA (subsidy administration), anything else is classified as 'random post' and sent to the relevant person or department specified on the envelope or opened and forwarded on. So far (9.15am), 19 boxes of passport application forms, 22 boxes of movement cards and 3 cages of 'dead' bags from the Meat Hygiene Service have been sorted.

…

Now in a room that resembles a classroom with tables lining the walls and two columns down the centre, at the end of each line a loading area, computer scanning equipment and various trays…post piled up high on each desk and people wandering in and out. I discover that one line is for scanning passport application forms (200 forms an hour can be scanned) and the other line for movement cards (a constant 'flicking' sound in the background as 2,000 cards an hour whiz through the equipment)…as each card or application form is scanned onto the system any errors are flagged up by the computer.

…

Through another door and into a huge warehouse - the 'data capture area' - an open plan office where errors identified by the system are initially looked at. Common errors include: incomplete details being provided, blue rather than black ink being used, illegible writing - is it an s or a 5, a 6 or a b? Some of the errors can be rectified quickly - making a decision between letters and numbers or phoning the farmer to check the details that she or he has provided. If this is not possible, or information is missing, the file is passed on to 'passport operations', Jennifer shocking me in recalling that at any one time 70,000 movement cards or passport applications are 'in suspense' waiting for errors to be corrected.

Tour of postal facilities with Jennifer, data registration team, Monday 30 June 2003.

The starting point for a cattle keeper in completing a passport application form or movement card is signalled by its arrival here - a warehouse in the middle of a run down industrial estate in England. The paper forms and cards that reach this destination becoming integral to a performative infrastructure that is premised on repetitive daily acts of shift patterns and tasks (x-raying, sorting, scanning, storing for three days or sending to another department). This routinization becomes necessary if cattle keepers on farms and staff at government office 5 are to meet a series of deadlines

for registering an animal. Cattle keepers, for example, have thirty-six hours to report movements on or off their holding; seven days to register the birth of a dairy animal and thirty days to register the birth of a beef animal; seven days to notify the death of an animal and thirty six hours to report the use of replacement ear tags[46]. Furthermore, staff in the postal room have targets to meet: scanning all documents on the morning of arrival so that the information can be checked as soon as possible and, providing the computer does not identify any errors, placed on the database the following working day. I want to take a couple of points forward from the extract above. For I am mindful that within these routines there are, perhaps, forgotten and bewildering cartographies of life. I want to diagram three ways in which cattle on Folly Farm might remain intangible and disrupt the human-technology interface of what is being reported and recorded about them on the database.

Firstly, it is here and now in the postal room that cattle are reconfigured from an ear tag (bodies-in-place) recorded on a paper card, application form or chequebook to become computerized information as a virtualized barcode whose accompanying information is to be inserted and updated on a central system. This effort, to map concisely where and how many cattle there are - a life history of a specimen (after Whatmore and Thorne 2000) - reduces Margaret to an absent presence - a set of numbers (*UK S372230012*) rather than the fleshy embodied being that she is. But a series of dead ends and missed paths become apparent: what if Martin sends the wrong passport or movement card for an animal - Margaret might disappear or get lost between her life on the farm and existence on the database. What about the ear tags that Martin purchases in bulk so as to qualify for a discount from the manufacturers and that ultimately he might never use - discarded tags and passport application forms? Secondly, and on this theme of 'disappearing', what if the movement cards or passports that Martin sends fail to arrive at all? What if he sells an animal and does not send the 'off' movement card and the animal's new keeper does not complete an 'on' movement card? Indeed the very existence of this animal might not be known until it dies. Thirdly, once the cards or cheque books are scanned in, if the computer detects any errors, this animal's file is put 'in suspense' and held in virtual space until inaccuracies can be investigated. Collectively, then, these questions highlight how cattle on Folly Farm become traceable according to a set of virtual coordinates such that the tracing system itself begins to open up all kinds of gaps through which new kinds of excursions can be coaxed into existence (after Thrift 2004c). In the empirical extract that follows I examine the representational ordering work that is undertaken as part of an attempt to dispose of errors (as matter out of place) (after Cresswell 1996; Douglas 1984:35).

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[46] Martin (the dairy farmer at Folly Farm) notifies government office 5 of all cattle births, movements and deaths in paper format. 35% of cattle keepers in Great Britain, however, provide this information electronically, either through existing software packages installed on farm office computers or directly online using the cattle tracing system. Martin persists in using the paper route as he believes the technology used by government office 5 is prone to failure thus increasing the amount of time he spends on administration. Government office 5, on the other hand, are implementing a series of campaigns to encourage cattle keepers to enter information directly through the website as they believe that this reduces keepers abilities to insert incorrect information (do see Irvine 2004; Richley 2003).

Passport operations centre

Sitting in a vast warehouse – it's a bit like being in a call centre; phones constantly ringing, divided desks, dimly lit…Catherine is responsible for area 6 - Cheshire - and deals with errors that the data capture team are unable to resolve. She receives 10-30 errors daily and is expected to correct 12 mistakes per shift.
Going through her in-tray, coming across file 06/342/0036 - a farmer claiming that one of his cows has given birth to triplets. Veterinarians specify that cows require at least 240 days between each birth and in this instance the dates do not match as the animal apparently gave birth 180 days ago…Another file - AH372230012 - this time a cow considered too young to have given birth… and there are lots of other cases sat in the tray awaiting investigation: incidents where the farmer has used an old breed code or failed to provide sufficient information about an imported animal, another farmer whom is claiming that his cow has given birth even though the animal is thought to be more than twenty years old!
…
When Catherine opens up one of the error files she has a series of procedures to follow. On day one, for example, she will call the cattle keeper to request information about an animal. If the keeper does not get back to her she will phone again on day two. By day five if no correspondence has been received she will send a letter outlining the error and the information that she requires from him or her. Oftentimes, in disputes concerning whether a cow was or was not able to give birth, her instructions will specify that the keeper must get a vet to examine the animal and provide written confirmation that this animal has indeed given birth. After 56 days, if the relevant information has not been provided, the passport operations team are no longer required to treat this file as an 'active case' and it is placed in the 'old work' storage space on the system.
…
The end of the day and Catherine has not had time to open 25% of the error files that she received from the data capture team…as I leave she calls up a summary sheet detailing that passport operations currently have 12,758 animal files 'in suspense' and almost 20,000 animals in the 'old work group'. This means that these animals should not be moved, or slaughtered and enter the human food chain, until their details are corrected.

Tour with Catherine, passport operations team, Monday 30 June 2003.

The empirical material presented here suggest that at any one time thousands of cattle are 'in suspense', as stagnant files in virtual space waiting to be examined, or transferred to a long term storage area in anticipation of being recalled some time in the future. In this way, the representational set-up (the standardized procedures, use of letters and codes that Catherine is expected to follow) is performative in its attempt to hold disparate things ('errors') together that might otherwise lead the tracing system fall apart. And yet cattle cannot be precisely fixed (the 12,758 files that warrant investigation), the animals themselves kept present while also being lost, varying in their digital form as time goes on and attempts to rectify the error pass from department to department and person to person (Callon and Law 2004). In this extract two types of deviation in digital form are apparent. On the one hand, animal AH372230012 signals complications over the age of an animal. Upon checking the system Catherine discovers that this animal was imported from France in November 2002. In this way, the tracing system extends beyond a query over birth date to

become part of a global tracking system identifying animals imported from within (and outside of) E.U member states:

> We've actually been round to other member states. A couple of years ago we arranged visits to look at how they monitor, the system they use, what kinds of problems come up. Our industry operates very differently to say how the industry operates in Denmark, you know, the lifestyle and movement of animals on and through to slaughter and the like... I mean some member state systems have been in place for thirty, forty, years or more... in terms of new member states coming in, we will have to make some changes to our system so that we recognize animals being imported
> (Annie, corporate projects team, government office 5, Monday 30 June 2003).

Although tracing systems within member states are not directly linked, the computer programming presently used in the U.K is able to read barcodes from other member states, although accessing *AH372230012* full details and complete movement history is only possible by contacting the French authorities. But not all animals imported into the U.K are registered in this way. Animals that are slaughtered or die within 15 days, for example, are exempt from the regulations.

On the other hand, these notes point towards the need for an inspector from government office 5 to visit the holding identified in file 06/342/0036 if the farmer is unable to provide sufficient or satisfactory information to Catherine:

> and what the inspectors are looking for is that the animals that are on the farm should be there, they haven't got any that we don't know about, their records are up to the standard required. If there are any problems there are a series of sanctions that can be imposed... individual movement restrictions can be applied, or it can go up to a whole herd level... There is a computer generated risk assessment done based on a number of factors relating to size, to other issues; and a lot of work is being undertaken with subsidy claims so if we have a farmer who we discovered to fraudulently claim a premium that they're not entitled to that person would perhaps get a higher rating... and then we also have ad hoc inspections where things come in here throughout the year that cause us concern
> (Annie, corporate projects team, government office 5, Monday 30 June 2003).

In carrying out a 'cattle identification inspection' the inspector will examine all the cattle on the holding, checking ear tags, passports and farm records. If there are errors in the passports these are sent to government office 5 to be amended. If there are differences between the information on ear tags, passports and the tracing register, movement restrictions are put in place prohibiting the movement of a given animal until these errors are rectified. If an animal is found with no ear tag, passport or farm record and the cattle keeper is unable to identify the animal within two working days it is slaughtered. But I would propose that what is most pronounced during these inspections are not the sanctions or penalties that might be imposed if errors are found, but instead it is here, for the first time perhaps, that for the staff working at government office 5 cattle are transformed from their previous position as virtual codes to the status of living fleshy beings and bodies in place.

But this ambiguous virtual/real placement of cattle becomes ever more convoluted in other departments, particularly in 'death'.

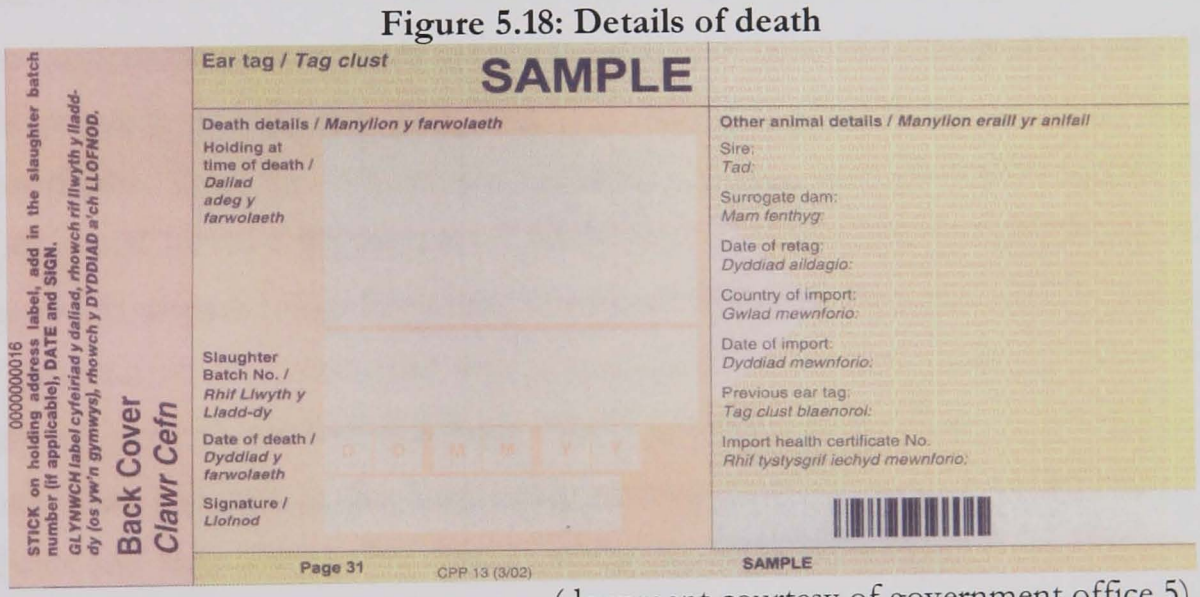
Deregistration

Off a corridor and across a bridge I arrive at a door labelled 'dead section'…opening the door a fluorescent sign greets me:

alive and well
may be dead
should be dead
definitely dead
risen from the dead.

I'm met by Michael who's responsible for processing passports returned to government office 5. I discover passports from the meat hygiene service have to be loaded onto the system within five working days, although for cattle that have died on farms, at market or during transportation, this can take up to five weeks. Before Michael registers an animal's death he will check its movement history, and if this seems fine and the paperwork that has accompanied the passport is complete, he will then enter the date of death and the date that the office received the passport onto the system.

Figure 5.18: Details of death



(document courtesy of government office 5)

Michael's desk is barely visible, swamped by passports and kill sheets, overflowing boxes; the room lined by shelves and shelves of blue boxes brimming with paper records. These are all documents "with problems" he tells me, incorrect slaughterhouse kill sheets, passports not filled in correctly. Michael informs me that he and his team are presently dealing with 6,900 'non-reconciled' passports - when the animal sent to slaughter and the documents sent to the government office are somehow mismatched.

Michael, deregistration team, government office 5, Tuesday 1 July 2003.

At first glance the death of an animal and return of its passport sitting somewhere on Michael's desk appears to be the final link in a chain that endeavours to trace the movement of cattle throughout their lives. However, I would submit that this is not an end point but rather, as the comical listing

on the signage depicts, there are varying degrees of living and dying. For these empirical notes indicate how incorrect documents can accompany animals to the slaughterhouse, that they are not always thoroughly checked and the animal correctly identified before and after slaughter; thus leading the passport to be reclaimed by a cattle keeper at a later date ('alive and well'), and the slaughtered animal's documents now forwarded on in its place ('definitely dead'). And there are instances too when the information provided by the slaughterhouse - the kill sheets - have inconsistencies that leads Michael to "take the meat hygiene's word for it" in settling any disputes. The number of passports and kill sheets requiring checks attest that the government office do not want to dispose of these documents permanently, that they need to be kept. What this means, in practice, is that cattle have a continued presence, through their chequebooks (figure 5.18) that both litter Michael's office and are held in storage in the warehouse next door.

In this section of the chapter I have sought to show how cattle are bound up in the folding and refolding of physical places (as living animals (ear tags) on Folly Farm) and virtual spaces (a digital code, passport and movement card). In this way, the theoretical enterprise at work through these encounters illuminates how the tracing system is not a discrete, linear, temporal sequence - a seamless representation (after Hetherington 2004) - but a series of foldings where cattle leave traces of their presence and absence that map and configure cyber-arrangements in surprising and unexpected ways. Take, for example, the 12,758 files 'in suspense', the 20,000 animals placed in the 'old work group', or the 6,900 'non-reconciled passports'. The unknown life status and living place of some 39,658 animals brings forth other imaginary dimensions as cattle remain temporarily stored on the database or in a warehouse with a potentiality to reappear. And it is these transforming capacities of cattle themselves that leads one to a series of interesting, and ethically orientated, questions: what, precisely, is the relationship between the organic, carbon-based fleshy beings on Folly Farm and their silicon and digital coding on the tracing register? On the one hand, this question may draw one to a farmer's everyday practices of care towards his or her animals in choosing not to implement the ear tag regulations and avoid the all too often rough treatment and infliction of pain and discomfort upon animals when tagging. On the other hand, I am reminded of the potentiality of using this tracing system to monitor outbreaks of animal disease, for food tracing purposes or to administer subsidy payments to farmers. Specifically, I am left wondering if this concern might be reversed and play out in relation to animal well-being - to provide details of when and where cattle are transported (journey times and conditions), how they live and how they die?

5.5 Conclusion: animalian spaces

In this chapter I have attempted to excavate the role that cattle play as co-constituents in place-making and spatial formations. That is, I have been concerned with how cattle, as living creatures with distinct animalian ways of being in the world, inhabit particular places and spatial settings through their everyday lives in ways that enact a series of absent-presences. The crucial manoeuvre being made here is to retrieve individual animals from a mound of relations by disclosing how cattle disturb their human imposed emplacement in the world. Specifically, what might it mean to draw on these theoretical literatures and empirically take individual cattle moving in, through and out of places as a starting point? One way in which these alternative animalian spatialities might be mapped is articulated in table 5.1. This table demonstrates some of the insights to be gained from an examination of the ways in which (individual) cattle lives are caught up and significant to husbandry practices, agricultural performances, veterinary research and electronic tracking. It is in drawing these four empirical settings together that I want to offer three sets of preliminary remarks.

Table 5.1 Cattle cartographies

	Field	Show	Laboratory	Database
Spatial Identity	Folly Farm	Agricultural event	Research facility	Administration depository
Spatial Topology	Landscape	Spectacle of display	Registration procedure	Movement service
Spatial Practice	Farming	Exhibition	Drug profile	Track and trace
Orderings of Life	Sedimented relations between people, cattle and farm	Training on farm / performing in ring	Target species safety and efficacy lab - farm	Barcode / cattle identification inspections
Animal Disturbances[47]	Movement patterns, Muddy trails, Lumps of earth	Directed gestures, Bodily substances	Digestion, Absorption, Adverse reactions	Birth, Movement, Death

[47] My use of the term 'animal disturbances' derives from Sarah Whatmore's (2002:35-38) effort to attend to the creative presence of non-humans in the fabric of social life and to register their part in human accounts of the world (see also Whatmore and Thorne 2000).

Firstly, I want to return to the images at the beginning of the chapter (figures 5.1 and 5.2) - depicting the site-based grazing of traditional cattle to support biodiversity management and spatialized forms of control implemented during the FMD outbreak. For these pictures invoke issues relating to scale and the relationship between space and place that are being worked through in this chapter. Specifically, the chapter moves away from network geographies (part 2.2) to weave together a contrapuntal of theoretical resources, a spatial vocabulary derived from ecology, dwelling, and blank figures. This conceptual richness, intended to move on debates about how to take seriously the spatialities of human-cattle relations, leads one to reflect upon the degree to which these strands are integral and diverge. What kinds of spatial formations are being mapped out? Where do these cartographies leave relational accounts of place? Do they enable one to apprehend the everyday lives of individual animals?

With these thoughts in mind, I want to argue that these (inter)disciplinary engagements need to be understood neither as separate nor mutually exclusive, but as having cumulative effects. Ecology and dwelling, for example, cultivate a sensitivity towards an animal's intimate relationship in its environment; enabling one to describe how cattle at Folly Farm organize themselves and interact in this place (grazing, territorial practices in a particular field) in both time-deepened and more immanent-momentary ways (parts 5.1 and 5.2). Consequently, these phenomenological associations bring us into thinking about how far dwelling reaches (Jacobs 1996), and complicate the idea that cattle lives might somehow be confined within the boundaries of Folly Farm, thus illuminating how cattle are part of a multitude of other spatial settings. In each of these other settings (show, laboratory, database) cattle can be seen to have the potential to linger, unsettle and return - an animal in a laboratory having an adverse reaction to a drug and resultant form passing through a government department, or file AH372230012 held in 'suspense' on the tracing register until queries about its importation are resolved. Taken as a collective, this theoretical ensemble acknowledges the mobile and transitory lives that cattle lead, threading constellations of grounded, material 'places' and virtual, technological 'spaces'. I am mindful, however, that more conceptual work is needed. Take ecological accounts of cattle that rarely, if at all, move beyond concepts of inputs and outputs through the farm ecosystem to take into account an individual animal's history, lifecycle, physiology and behaviour. To do so would undoubtedly enrich understandings of how cattle experience a given habitat (see also parts 2.1 and 2.3). Or, contemplate how work on blank figures remains concerned with stasis and change, with the unworldly and facilitating new connections rather than exploring the empirical presences/absences of animals and fleshiness of individual cattle unfolding in the fabric of the world.

Secondly, and with these anxieties in mind, the theoretical strands at work do urge us to map out how the everyday spatialities of cattle constitute a mode of dwelling, as against building, in the world

(part 2.4). This can be seen through the deployment of the term 'co-constitution'. This term endeavours to glimpse spatial settings in alternative ways: through descriptions of individual animals in particular settings that permeate and go against the grain of human designs ('disturbances'). I am thinking here of Phoebe 'escaping' from the field (part 5.1), cattle colliding as they leave the show ring (part 5.2) or the incomplete movement histories of animals (part 5.4). In this way, the practical enterprise at work through these empirical encounters attends to how cattle have a plethora of embodied skills, a series of 'know-hows' in their understandings of and attachments to their environments and others (i.e., animals, humans, plant life). But I am also a little wary of the term 'co-constitution' and continue to ponder the ways in which humans design, influence and modify the spatialities of cattle (table 5.1). In other words, how do humans constrain and hinder these animalian (embodied) natures? How do the boundary-marking practices that result lead animals to be understood as 'in place' or 'out of place' (after Cresswell 1996)? Consequently, how can cattle be seen as co-constituents? What I am trying to comprehend is how humans remain influential in weaving cattle into ideas of 'landscape' and 'countryside', pastoralist and productivist narratives. In this way, cattle in a field at Folly Farm can be seen as part of an aesthetic and cultural landscape (a 'pastoral habitat') where animals are for people; their presence in a field or display in the show tied to discourses about production and consumption and bound up with Martin's decisions about when and where animals will graze, and in spending months training animals for the show through the use of ropes and sticks; their lives made bearable through being able to graze outside and in Martin choosing to remain with animals during show opening times. In part, then, the task that lies ahead is to conceive of alternative concepts that offer up another way of understanding co-constitution:

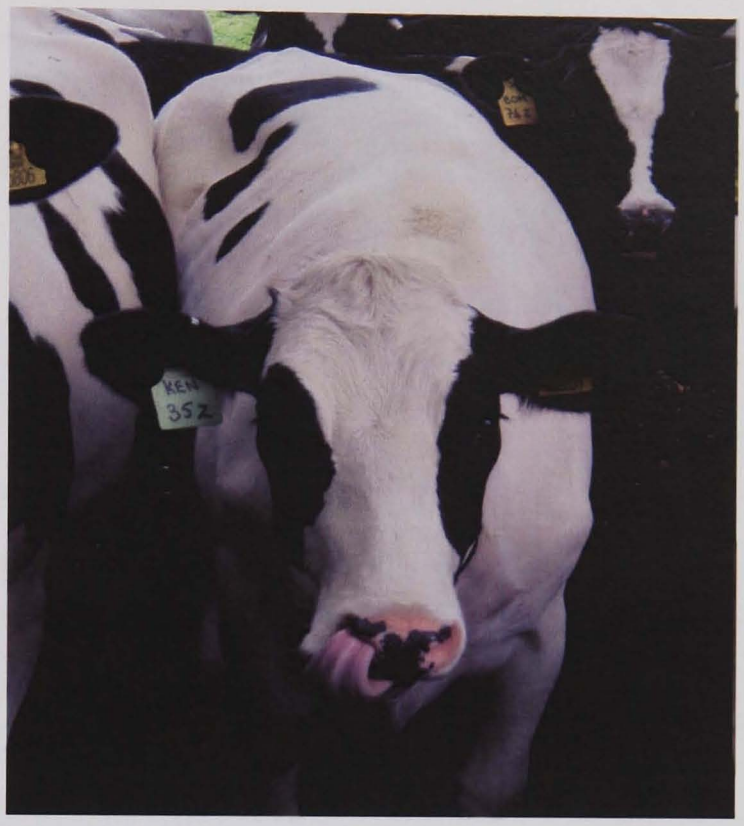
> In everyday landscape practices, non-humans often object to the stories and roles that have been set for them... The challenge for intellectual and political practice has been and will be to learn how to allow non-humans... to object more frequently in these settings (Hinchliffe 2003:221-222).

Thirdly, attending to what cattle do in places and spaces, then, conjures up inherently ethical dimensions. How are cattle unsettling how 'we' know where 'we' are in time and space and how 'we' position ourselves in the world (after Clifford and King 1993)? This question, in recognizing the influential part that humans play in cattle lives, queries the naturalness or artificiality of the spatialities that animals are afforded (see also part 1.32 and 1.4). For I think that one needs to pay attention to the environments in which cattle are living and dying and ask if these conditions of existence are appropriate. But how might one begin to do this? I think, by taking up the life of an individual animal - this is, for example, to begin to think about how a single cow is being acclimatized at the laboratory site and what the impact of spending several days in a perspex cubicle on the senses and interactions of this particular cow might be; or to contemplate the conditions on the Folly Farm and why Phoebe decides to leave the field.

Although the last two chapters have drawn attention to cattle natures and ways of being in the world they still has much to do in addressing the ethical and political issues being raised. The sixth and final chapter of the thesis takes forward the focus on 'bodies' (chapter 4) and 'spatialities' (chapter 5) to establish individual, and not solely relational, understandings of ethical considerability. And it is here, I hope, that cattle will not be viewed as "inmates on the move, throbbing and pacing, all the more so against the forces that confine them" (Anderson 2004:173) but that their ethical status might lead cattle on Folly Farm - and animals grazing sites of special scientific interest (figure 5.1) and even charred remains (figure 5.2) - to be felt and heard in (human) accounts.

6. The ethics of human-cattle relations: anthropocentric (in)visibility, (human) practices of welfare, (animalian) spaces of difference

Figure 6.1: Amy



(Photograph taken Friday 5 July 2002)

"People think all my cows do is eat"…*Martin tells me on our way to the shed.* "Amy come on…Amy come on…what's happening? Are they pushing you out?" *Martin and I arrive to find Amy standing behind all the other cows.* "Here…what is it? Come on, try that...she's just really, really cheeky and the others have had enough". *Amy approaches the trough and begins eating, Martin glides his hand down the middle of her face.*

In the field with the herd…Amy and Beatrice are jabbing and knocking into Barbara and then fleeing. They do this several times, the last time they 'sneak' up on her and sniff her bottom…After a few minutes they begin running back and forth across the field. They stop, stand still and begin licking each other…a few minutes pass, then Melissa and Barbara approach them, they circle Amy and Beatrice before Barbara forcefully bangs into Amy's stomach, turns her body and kicks the top of her leg, Amy and Beatrice run away. Barbara begins to follow, all of a sudden she finds her path blocked by Rosie. Barbara stops, pauses for a short time, Rosie remaining in front of her, and then they both return to graze. Amy and Beatrice move to the furthest part of the field.

…

Martin arrives for afternoon milking…at the parlour he comments on how Amy "looks quite startled and upset". *After all the cows have been milked Martin pops back to the house and returns with chopped tomatoes which he gives to Amy.*

"It's a survival game. The majority of people are only interested in cheap food. The government have no genuine interest in the rural community…let's be quite basic about it, I'm feeding the people and struggling to do so…it's very difficult for me to say I can't make a success of this".

Fieldwork notes, Monday 29 July 2002.

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6.0 Introduction: zero-order humanism and animal alterity[48]

In this chapter I want to explore different ways of thinking about cattle ethically. On the one hand, I want to trace how existing approaches have positioned animals in ethical communities; on the other hand, I want to offer empirical insights to attend to how Amy and other cattle might be re-positioned within these understandings and framings. This concern - with the ethics of human-cattle relations - has been signalled throughout the thesis, for all the previous chapters have illuminated ethical and political strands as they become implicated in cattle lives. In chapter 1 I described the scientific techniques used to collect data and manipulate and transform cattle (part 1.1), the stages and processes through which cattle are turned into food and other consumable items (part 1.2), and the ways in which animals are portrayed in popular culture and art exhibitions (part 1.3). In so doing I questioned the meanings surrounding the term 'animal welfare' and how it might be monitored (see Bateson 2004; Rushen 2003), described some of the 'hidden' connections that people have to cattle, and queried the challenge faced by artists in being ethically responsible without appearing aesthetically sentimental (Baker 2000; O'Sullivan 2001:129). In chapter 2 I examined the theoretical place of animals in ecological and social sciences and emphasized how these approaches can appear so pre-occupied with relations that animals are not identified as "distinct subjects, worthy of epistemological, political and ethical distinction" (Jones 2003:293; see also part 2.3). Moving on, in chapter 3 I described my attempts to research *with* and *for* individual animals, providing accounts of how I muddled my way through empirical work amid (normative) form filling and ethical protocols that often bore little relation to the actual practice of research (see part 3.24). These conceptual, theoretical and practical themes were worked through in the two chapters that followed. In chapter 4, for example, I attended to how individual cattle on Folly Farm have corporeal life patterns, habits, rhythms and behaviours that go against the grain of reproductive, milking and dietary knowledges. Finally, in chapter 5, I explored how cattle might be seen as co-constituents of physical places and virtual spaces, hinting at how certain ethical commitments (the human imposed emplacement of cattle – experimenting, training, grazing) are being formed at different spatial scales (Cresswell 1996).

Taken as a collective, my intention in this thesis has been to explore how the lives of cattle are changing as a result of human interventions and how individual cattle - as living, fleshy beings - cannot solely be fitted into these human discourses but leave their imprints in human lives and spaces in more intimate ways. Likewise, then, each of these chapters, either implicitly or explicitly, traverses an array of ethical matters. For example: what benchmarks are used to make judgements concerning the level of human intervention deemed permissible or appropriate in animal lives? Do the human practices towards cattle described throughout this thesis take away something

[48] My use of the term 'zero-order humanism' derives from the work of Livingston (1994) and is intended to signal the ways in which humans are considered to be deserving of absolute control over animals. To be clear, and in the words of Livingston (1994:140), "I define it as the ideology of the necessary primacy of the human enterprise".

fundamental about what it is to be a cow, bull, calf? Are there, or should there be, limits on how far humans commodify animals for their functional worth (meat and milk production)? Thus, as my thesis has progressed my argument has become clearer. It is to present a blueprint of human-animal relations that pays credence to how the animality and fleshliness of individual cattle are integral to, apart from, and exceed relational understandings of the world. In this final chapter I attempt to open out and respond to theses issues in thinking through what makes 'us' human and how humanity might live 'rightly' or 'morally' with individual animals in the world.

The stress of this chapter, then, is to query the very nature of being and thus who or what has ethical standing. This chapter takes as its point of departure Amy (figure 6.1); for this empirical example recapitulates areas of contemporary debate in animal ethics. Here, Amy appears disparately in narratives relating to the provisioning of food (carton of milk, block of cheese), the intensification of agriculture and farming practices (genetics, concentrate feeds, mad cows), the object of political debates (can Martin make a living as a dairy farmer?), and the institutionalization of the market and policy (yields and pence per litre); that enact a series of binaries such that rural and urban environments, (human) consumers and (Amy) consumed are counterposed. Moreover, the descriptions and quotations here serve as an important parameter for understanding the ethics of human-cattle relations. For example, what assumptions about cattle abilities, needs, capacities and potentialities are imparted by humans at different spatial scales and in different contexts (agro-industrial, social welfare, institutional)? In which ethical arenas are we prepared to accept the rearing of cattle (factory, intensive, extensive, organic, free-range)? What are the connections between individual animals (Amy), the herd, species and the way in which cattle are raised? Is the environment (Folly Farm) that humans (Martin) have created for cattle as it should be? How might cattle reconfigure these ethical relations? With these questions in mind, in the first part of the chapter I acknowledge how cattle have (traditionally) been excluded from the moral community, explicating ecological and social scientific work on relational forms of agency that seek to reconstruct the boundaries between human and non-human. Then, secondly, I set out how animal welfarists and rights advocates have focused on farm animal welfare, describing four 'orthodox locaters' to illustrate how Amy is subsumed into a set of debates that frame what is considered to be good or bad, humane or inhumane treatment of cattle. Where, then, do these theoretical trajectories and practical locaters leave human locatedness? Thirdly and finally, I draw on other empirical examples with individual animals at Folly Farm (and in other places) to present accounts of ethical practice that disconcert and open up these theoretical frames and ideological locaters, thus moving towards alternate points.

6.1 Framing the ethics of human (Martin) / cattle (Amy) relations

A starting point here is to consider how animals have been (traditionally) excluded from the moral community and the (contemporary) residual humanism that remains. For how has Amy found herself configured as a raw material and a resource whose bodily functions and life experiences are altered and manipulated with a resultant price tag attached (as Martin receives 16p per litre for her milk)? This conceptualization of her life and that of other cattle on Folly Farm, as passive and separate from human society, can be followed, in an historical context, back to the medieval period and the divide between reason and emotion; through the Christian tradition and doctrine of St Augustine and Thomas Aquinas; through Greek philosophy and the work of Socrates, Plato and Aristotle; and in a more contemporary context to the Cartesian scientific approach (Rowlands 2002; Wise 2000). These ideas have much to say in pervading understandings that humans alone possess minds, immortal souls and the facility of speech, and that animals were, and still are, incapable of thoughts and feelings. Moreover, it has been demonstrated that the subsequent encoding of this very understanding has been underlain by an unstable and disputed meaning of what it is to be an ethical subject (see Anderson 2003; Anker 2004 for commentaries). Admittedly, and as previous chapters have sought to demonstrate (see part 1.13 and 2.1), it is this 'stable' yet inherently 'unstable' way of understanding the world that has become easily communicable and sustainable, defensible and consensually agreed upon according to the understanding that pervades (a certain type of understanding and hence a certain type of knowledge premised on human exceptionalism). The culmination of this pronouncement is a concern with what makes us human (after Anderson 1997:466) - how humans are apart from animals - so as to permit a refinement of animal lives against a backdrop or marker of assumed humanness (Plumwood 1999):

> To call something 'natural' meant to divide the world into that which was human and that which was not and to place the naturalized thing, cogitatively, into the realm of things to be... turned into a dollar, but in no case thought of as an active participant in human affairs (McEvoy 1989:223).

Crucially, then, ethical discourse remains, conventionally at least, framed in terms of humans; for people, it is argued, are the only species capable of being deliberative moral agents (Plumwood 1999; Ryder 2000). Importantly, what do these representations mean for animal life? In response, I would argue that it leads the fate of Amy to very much depend on different human (Martin's) decisions about her place in wider patterns of human stewardship, preservation, interests and rights.

And yet as these empirical notes illuminate, something else begins to emerge that disturb these deceptively neat humanely derived classifications and definitions. Amy's everyday life points a way through the organization - representational (dairy farming), social (capitalization) and biological (milk production) and lead to an interpretation of the world that is inaccessible and away from view

yet more intimate - a series of unfolding relations between Martin and Amy, Amy and Beatrice, Amy and Barbara. These notes describe how Martin looks after Amy: pushing the other cattle out of the way so that she could reach the trough, his concern when her demeanour changes and desire to make her feel better by giving her tomato. And these notes invoke Amy's feelings, stimulations, pleasures, pains; her apprehension in the shed and uncertainty in the field. Consequently, Amy is much more than a dimension in the (human) food chain, an agricultural commodity. Importantly, this stance, with its recognition of animalian life, opens itself up to questioning the extent to which moving beyond anthropocentrism requires the abandonment of human location. In ecological and geographical thought we find a set of instructions for enacting this attention to ethics on human and animal terms.

In the first instance, ecological insights offer a critical standpoint from which to assess the conviction that the human should not be the measure of ethical considerability and that one needs to consider what this concept means in terms of human relations with non-humans. In this way, Martin and Amy can be seen as part of wider socio-ecological project intent on fostering (human) responsibility towards animals and sharing responsibility for the natural world. I am thinking here of how ecologists design and test agricultural systems. Ecological forecasting, for example, seeks to empirically measure the potential global impacts of agriculture (pesticide use, habitat conservation, soil fertility, grazing densities) (Tilman et al, 2001). Moreover, Jensen and Sorensen (1999) describe a process of ethical accounting in providing a farmer with information about how his or her production system and farming practices impact upon animals and the environment. And it is here, amid these attempts to measure, monitor, predict and manage the (farm) planet that relations between human (Martin) self-interests and benevolence towards cattle (Amy) come to the fore. What are the relations between a duty of care to the (Folly Farm) ecosystem and a duty of care to humans and non-humans (Amy) that make-up that ecosystem? For example, does Amy have rights, qualities and potentialities in dwelling on Folly Farm that need to be taken into account? Are there morally right and wrong ways, therefore, for Martin to design, construct and alter the spaces (shed, field, parlour) in which Amy lives? These questions constitute a domain of relational thought that seeks to avoid speciesism and faunaism and making a series of distinctions between deliberative and non-deliberative actors, conscious and non-conscious beings (Dion 2000). But this ecological schema, for me, certainly causes problems. My anxiety is about how a non-human domain with its own ontological properties set apart from a human societal domain leads human and non-human entities to remain pre-set. Significantly, this leads ecological work to focus on the exploitation of animals rather than the potential tangible links between humans and animals (see also Murdoch 2003). And this, I believe, leads ethical deliberation and decision-making to become, and remain, a distinctly human affair; of how Martin chooses to farm his land (cropping, grazing), or the ways in which he decides to rear Amy for food. The conundrum raised by Whatmore (2002:156), therefore,

is how ecologists might bring together the ethical standing of nature (including animals) 'in its own terms', with the ineluctable humanism that resides in its non-anthropocentric enterprise.

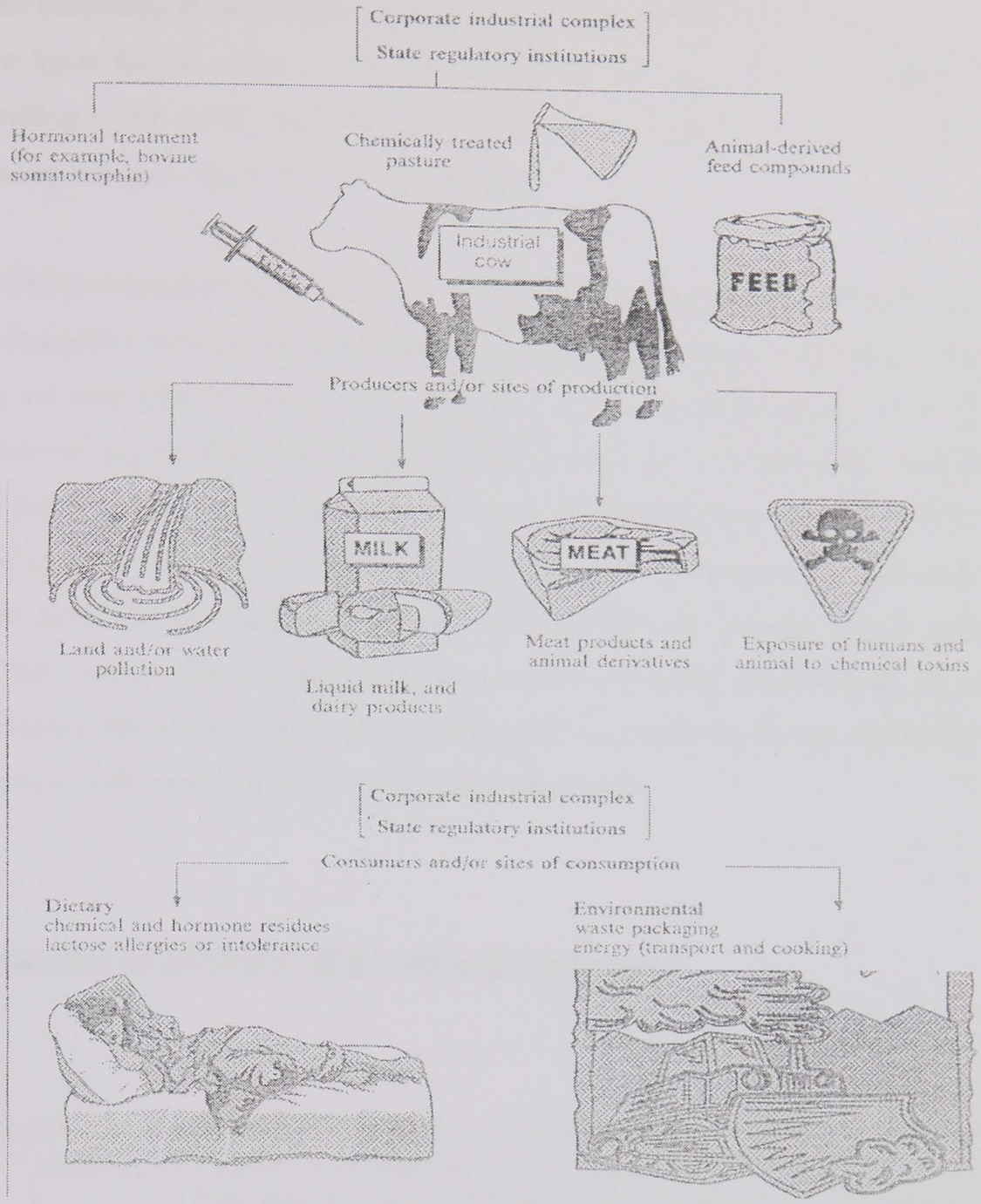
In the second instance, undoing this single (human) horizon through which 'we' view the world has led geographers, and social scientists more generally, to describe how things conventionally labelled 'natural' or 'environmental' are thoroughly social - an outcome of complex assemblages in which humans, non-humans and the inhuman are immersed in 'living' relations amid differences, discontinuities and entanglements (after Hinchliffe 2001:182; see also part 2.2). This position has been presented foremost by theorists such as Bruno Latour (1987 2004a), Donna Haraway (1997 2003a), Sarah Whatmore (1997 2002), Lorraine Thorne (1998), Steve Hinchliffe (2001) and Nick Bingham (1996). Here:

> ethical praxis emerges in the performance of multiple lived worlds, weaving threads of meaning and matter through the assemblage of mutually constituting subjects and patterns of association that compromise the distinction between human and non-human (Whatmore 2002:159).

Another kind of understanding exists, then, one that displaces the fixed and bounded contours of the ethical community. It is from this that Sarah Whatmore (1997 2002), and those with whom she collaborates, articulate an intersubjective notion of ethical agency. This building of a relational ethic (illustrated in figure 6.2) connects:

> the life practices of human food-consumers and food-producers with those of other animals, plants, and environments over considerable distances. The ethical connectivities between actants at one location in the network and those at other locations are no less intimate or immediate for the physical distance or lack of proximate knowledge involved (Whatmore 1997:49).

Figure 6.2: Hybrid contours of ethical community



(Whatmore 1997:48)

At a conceptual and theoretical level this work opens up ontological questions in (re)contemplating who or what might be morally considerable (Braun 2004a). In practice, this leads Amy to be imagined as part of an intricate network of relations (figure 6.2); her body inscribed by hormonal, genetic and chemical treatments and fashioned in particular ways through humans (Martin), technologies and the environment. But, with the emphasis on relations now thoroughly exhumed, amid an argument that there is no such thing as preconstituted beings, I am left wondering where these performative and immanent geographies might lead. In other words, how might one map relational ethics from the perspective of Amy (see also part 2.3)? Thus, what kinds of attachments are being sketched out here - what kinds of ethics and ethics for whom are emerging? Whatmore (1997 2002), for example, encapsulates how cattle are rationalized so as to conform to the needs of

particular farming networks (see also Stassart and Whatmore 2003:456), citing alternative food trading networks (organic, fair trade, local produce) as confirmation of the utility of her approach. But I am left pondering if something important is being lost here - that the transfigurations of milk illustrated in figure 6.2 are a denial of Amy as an individual cow with her own embodied needs and ways of dwelling in the world. And furthermore, that the mapping of ethical connections exhibit a lack of empathy towards Amy's situation and plight.

From very different perspectives and contexts, I am left contemplating if relational approaches that harbour an inquisitive concern for the autonomy of animals are framed according to the meaning of humanness, so that what it means to be human is a continually rehearsed issue. Is a lingering anthropocentrism permeating through these debates? For the possibility that individual animals might have political status in their own right becomes implausible (Castree 2003c:207). Put another way: how, if at all, is Amy admitted into relational accounts? These questions link to a wider set of issues about how we, as academics, decide which animals are present in our arguments, and significant and valid in the commentaries that we are providing. And through all of this I am probing if fixed entities are not all bad, then, for they may assist me in my endeavour to map the ethics of human-cattle relations at the level of individual cattle.

6.2 The contours of animal welfare: orthodox locaters

I really wish that animals wouldn't be so tough because I often think that to be a farm animal today is a tough existence, it's a nightmare, but they live, and it's a really ugly scene from birth to slaughter, it really is
(Caroline, founder of animal rights organization T, Thursday 1 May 2003).

The secret life of moody cows

Once they were a byword for mindless docility. But cows have a secret mental life in which they bear grudges, nurture friendships and become excited over intellectual challenges, scientists have found. Cows are also capable of feeling strong emotions such as pain, fear and even anxiety - they worry about the future. But if farmers provide the right conditions, they can also feel great happiness. The findings have emerged from studies of farm animals that have found similar traits in pigs, goats, chickens, and other livestock. They suggest that such animals may be so emotionally similar to humans that welfare laws need to be rethought. Dr Christine Nicol, professor of animal welfare at Bristol University, said "remarkable cognitive abilities and cultural innovations have been revealed. Our challenge is to teach others that every animal we intend to eat or use is a complex individual, and to adjust our farming culture accordingly".

(Leake 2005: 13)

It's all from the supermarket in clingfilm and there's no connection there with what that farm animal's been going through and I think that permeates through to the concept of animal welfare. I mean, we have hard issues to handle with farm animals... before, I've worked on anti-fur campaigns, anti-vivisection campaigns, and although they've been hard, farm animals are extraordinarily difficult because they're numbers. And the biggest problem in terms of animal welfare is animals being killed for food, and internationally too, in terms of the numbers
(Miranda, campaigns team, animal welfare organization S, Monday 16 June 2003).

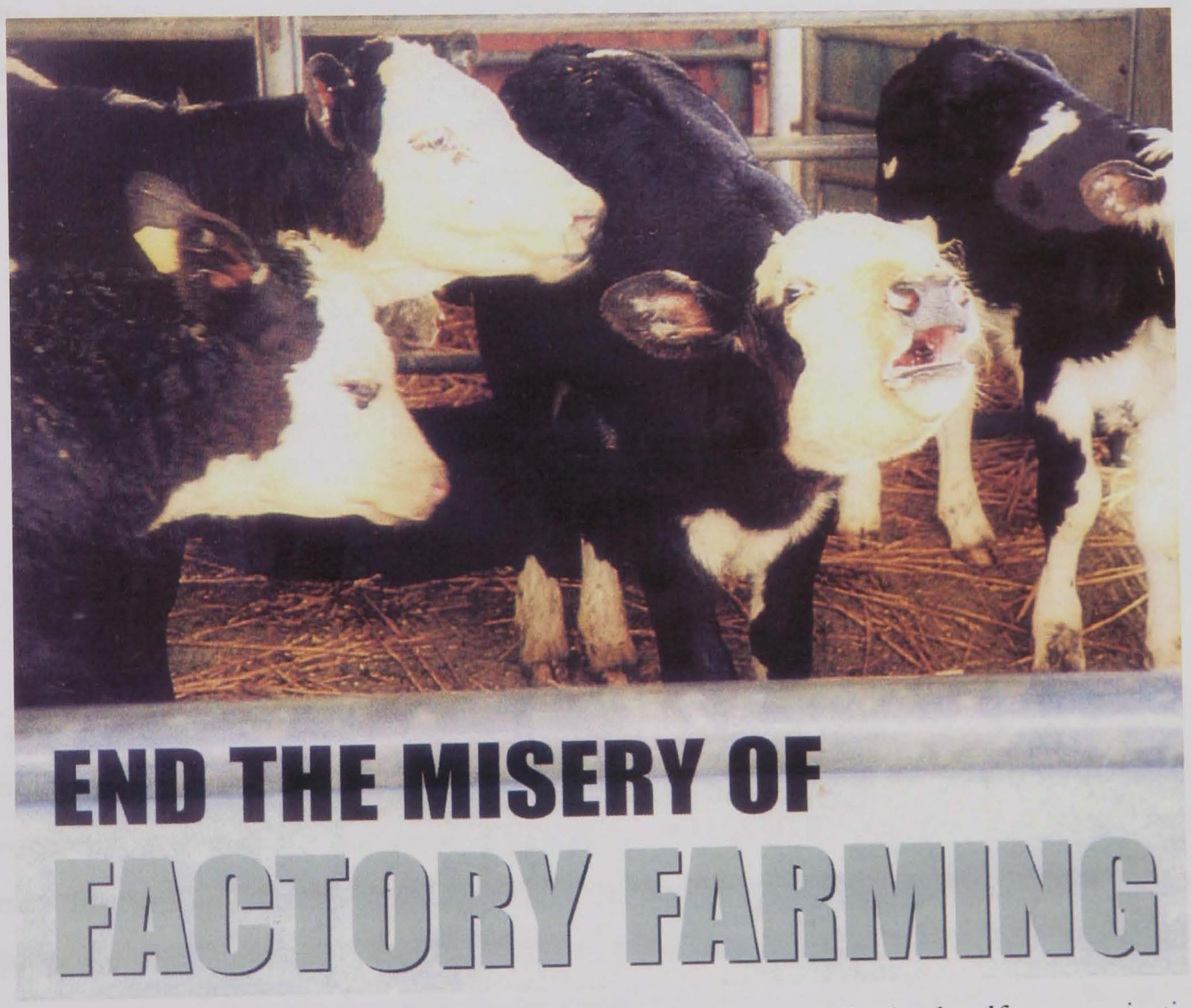
Amid the academic territory sketched out in the previous section, these quotations present an overview of how Amy is caught in another kind of ideological orientation. For there is a profound link being signalled here between Amy's (emotional) life, Martin's farming practices and the role of citizens towards animals reared for food. It is this link that leads animal welfare and animal rights organizations to intervene in the conditions that make possible Amy's life (milk and meat production), highlighting how cattle are raised and in calling for new modes of existence that take account of what it is 'to be a farm animal today'. This argument is protracted through the extract above, taken from the Sunday Times newspaper, and disclosing a piece of scientific research revealing that dairy cows form friendship groups; can dislike other cows, often bearing grudges for many months or years; and become excited when another cow comes into heat. This story, whose findings culminated in a scientific conference in London organized by an animal welfare organization, suggest that such discoveries may need to be taken into account when drafting existing or forthcoming animal welfare legislation.

What is of interest here is the way in which the story rekindled debates in the media by challenging the assumption that farm animals cannot suffer from the conditions in which they live, conditions that would be considered intolerable for humans, because they are less intelligent than people and that, therefore, they have 'no sense of self'. Here and now, rather than portraying Amy as a 'docile' or 'dumb' beast, she emerges as an individual, with emotional capacities whom seeks out pleasurable activities in her everyday life. On the one hand, scientific research and societal values collide in querying the changing meanings and referents of the term 'animal welfare' – is it possible for people to imagine what it is like to be a dairy cow (Amy), to have a "tough life"? On the other hand, the story alludes to the muddying of human/animal boundaries in demonstrating that farm animals are more complex biologically, intellectually, emotionally than previously realized - does this lead cattle to become more than "just numbers", wrapped in "clingfilm"? In this section of the chapter it is not my intention to compare human and animal intelligence (see part 1.13), and nor is it to document how the belief that farm animals are automatons is being overturned (for a history of the relations between humans and non-humans and the establishment of the animal welfare and animal rights movements see Kean 1998; Maehle 1994; Ryder 2000), rather what concerns me is how issues relating to farm animal welfare reach the popular media. Specifically, I am concerned with how Amy and other cattle are used in the campaigning activities of animal welfare and animal rights

organizations and individual protestors[49]. To what does (farm) animal welfare refer and how is this conveyed to the general public? How does an item, event or happening become a campaigning issue, and how is that campaign organized and deployed?[50] As I work through these questions below I indicate four 'orthodox locaters' or 'markers', that is, (iconic) matters that frame and position cattle in welfare debates made tangible to the general public. These markers include: *calves* (veal crates, cow-calf separation), *production* (of milk and meat, the health and prevalence of disease among cattle), *transport* (to market and slaughter) and *death* (human consumption of animal products).

Production

Figure 6.3



(Image courtesy of animal welfare organization S).

[49] Please note: a range of animal welfare and rights advocates participated in my research (see appendix VIII). Oftentimes these advocates were affiliated with a particular organization or loosely associated and connected with such an organization. Three participants considered themselves to be independent protesters but did, however, participate in the campaigning activities of organized groups.

[50] In this chapter I define campaigning as any organized or unplanned attempt designed to mobilize public opinion on animal welfare and rights issues. This includes, for example, informal conversations, the brainstorming of ideas, and the gathering of information.

Mechanical cow Milk machine. Genetic freak. Primed athlete with blisters before 2 miles. Rover car. Crop. Tin of beans. Jew
Turkeys aren't just for Christmas, nor cattle just for the butcher[51].

...

This image, and the adjectives and analogies used to describe cattle lives, form part of an attempt to impart members of the general public with an understanding of the ways in which contemporary farm animals are reared. Tracing the place of production, an agricultural setting, and depicting the animals themselves as abnormal, suffering, 'crying out' (figure 6.3) through their inhabitation of these environments. In this way, attention on farm animal welfare tends to focus on intensive systems of farming, that is, where the main concern of the farmer or producer is to maximize yields, often at the expense of the animals' health and well-being. In this way, these descriptions attend to psychological and physical health problems in stressing how animals kept in confined spaces are prevented from performing many of their 'natural' and 'social' behaviours – protruding bones, Mastitis, blisters (see also part 1.31 and figures 1.7, 1.8 and 1.11). What emerges, then, is an understanding that there is something unacceptable about the way in which farm animals are reared for food under intensive conditions:

> I mean our main issue is to do with cull size which is leading to all kinds of problems. I mean the actual metabolic strain... only lasting three lactations when it should be double that... I mean if we had lower yields and kept the cow longer then you'd probably make more money that way. But, then, people are so obsessed with breeding from the things that produce the most... and I mean when they're born they select early on as well which ones they think will produce the most milk... cows don't last very long now
> (Miranda, campaigns team, animal welfare organization S, Monday 16 June 2003).

> Cows are worn out... we've got one or two herds around here and it's just appalling... the cows are hunched, their bones are sticking out and the lameness is very, very widespread (Caroline, founder of animal rights organization T, Thursday 1 May 2003).

For cattle, intensive production leads to 'unnatural' ways of living according to reproductive technologies (artificial insemination, cloning) and cow-calf separation; insufficient housing (barren environments, zero-grazing systems); injuries and diseases (metabolic hunger, exhaustion); transport (journey times, handling and loading, poor ventilation and lack of food and water); and an inappropriate diet (concentrate based, deficient in iron for veal calves). But campaigning against intensive systems of farming, or calling for an end to farming, remains a difficult, complex and long-term goal, for as Miranda reminds me:

> ... when you're trying to attack the whole system but attacking bits of it... I'm not sure if things are going to get any better... I was at a [lifestyle show in the U.K] and a lot of people

[51] These descriptions and analogies derive from interviews conducted with members of organizations Q, R, S, T, U and V. For specific information regarding the animal welfare and animal rights organizations that participated in this research please refer to appendix III.

> came up to me and said... "I cannot believe that this [intensive production] is still going on"... I mean people think we should be doing a campaign on practically everything [...] We're in it for the long haul with our campaigns and I mean people do get bored of us raising the same issues. It's like with live exports, everybody seems to feel that we've been there and done that now... I hear that all the time... people are frustrated that we haven't been able to change things or that change takes so long.

How, therefore, amid the issues of concern that intensive or factory methods of production generate, do animal rights and welfare organizations highlight the plight of cattle? What campaigns are designed, rehearsed and disseminated to the public? Broadly there are four dimensions that determine the establishment of a campaign. Firstly, campaigns are often decided upon by directors, founding members, and legal, political and policy staff (organizations Q, R and S). Secondly, according to the number and type of animals involved:

> it's because of the sheer number of animals being affected as well... so numbers are one of the factors that we take into account [...] kind of decided by Europe and what's going on in terms of legislation as well
> (Miranda, campaigns team, animal welfare organization S, Monday 16 June 2003)

Thirdly, according to the emergence of new legislature, scientific work and discussions in academic journals, the trade press and other media (organization R). Fourthly, and finally, if the issue connects to wider matters relating to food, farming and the countryside (organization Q). In what follows I want to outline three ways in which these dimensions have led cattle to be positioned in debates about farm animal welfare: *calves*, *transport* and *death*.

Figure 6.4: veal crate

(Image courtesy of animal welfare organization S)

The calf is often taken from its mother within 48 hours of birth and abruptly weaned on to milk substitutes, an inadequate replacement often fed from a bucket at the wrong temperature and necessitating a sudden change from maternal suckling to unnatural lapping. Leaving a calf with its mother until weaning and separation occur naturally may be ideal but it's not practical within the modern farming industry
(Andrew, chemical scientist, animal welfare organization Q, Tuesday 15 April 2003).

This image and quotation have the potential for making coherent how (milk/beef/veal) production depend upon the separation of cow and calf. Figure 6.4, for example, depicts a young and frail animal, placed in a bare and wooden slatted stall approximately one foot ten inches by four foot six inches (animal welfare organization S). The crate itself shown to be too small to allow the calf to stand up, lye out or move around. This calf is destined for the veal trade and will be confined in this crate until he is four months old, have no contact with other calves, nor access to solid food or water as he is fed a liquid 'milk replacer' - a mixture of dried milk products, starch, sugar, additives and antibiotics but that is deficient in iron to give his flesh a pale colour that will fetch a good market price (Rowlands 2002). In particular, welfare and rights organizations convey to the public how this young animal is deprived of a life; for he is suffering from a series of health problems resulting from this diet (anaemia, thirst and chronic hunger) and a set of neurotic behaviours (boredom, loneliness, gnawing at his body, attempting to eat his urine and faeces). Although the veal system was banned in the U.K in 1990 and will be illegal in the European Union (E.U) in 2007, calves are routinely separated from cows in the U.K dairy industry (animal welfare organization S). Therefore, animal welfarists and rights advocates remain concerned about a calf's removal from it's mother within the first few days of life. Thinking through the effects of this separation, Andrew in the quotation above cites the newborn calf's suck as "unnatural lapping", as other organizations draw lines of comparison between 'breast-fed human babies' (animal rights organization T) and 'a

child's first few days at school' (animal rights organization U) in describing maternal bonding and this unhappy parting.

Long distance transport

Figure 6.5: Cattle journeys to the market and slaughterhouse

(Image courtesy of animal rights organization T).

(Image courtesy of animal rights organization U)

In the mid 1990s the export of live calves for the veal trade attracted media attention. Jill Phipps, a well-known animal rights protester, was crushed to death by a truck carrying calves for the trade at a demonstration at Coventry airport in February 1995. The resultant coverage of Phipps death both raised the profile of the live exports of farm animals and encouraged protesters to continue demonstrating. Indeed, the anniversary of Phipps death is commemorated by events at airports and docks across the U.K. Among the objections raised by welfarists and rights advocates are the long distances that animals are made to endure, the level of suffering that is inflicted, the scale of the trade, and the use of European taxpayers money to subsidize the business (organizations Q and S). Cattle have featured prominently in transport campaigns:

> cattle are transported, and its quite spooky really, the way Jews were treated in trucks and concentration camps... I mean if you were living in Nazi Germany would you want to wear Jew's skin on your feet? Why would you want to do that? It's repulsive... I mean I actually got told off by a Jewish organization for even daring to compare the holocaust with the treatment of animals, and I told her that I think we've learnt nothing from the holocaust... its speciesism isn't it?...we're just like the Nazi's because we're saying that cattle are dirty, inferior to us and that we can do what we want with them
> (Tanya, media and public relations, animal rights organization U, Tuesday 20 May 2003).

> Since BSE the trade has virtually stopped... but I mean at the moment the government are reviewing the over thirty month rule, and if they revise it... I mean exporting animals is all tied into that legislation really... We've noticed that people aren't that concerned about sheep going through [name of port] and we just can't get the numbers out like we used to in the nineties... if calves were still going through there now we would be able to get people out there. I was talking to a lady who was there in the nineties and she said to me "oh, and you could hear them crying and they would look at you with their big brown eyes" and so people do tend to put human personalities onto that species [cattle]... but at least that got people out there
> (Miranda, campaigns team, animal welfare organization S, Monday 16 June 2003).

These comments articulate public anxieties surrounding the live export trade - the cries of calves and plight of cattle in the back of transporters. These concerns, and the BSE and FMD crises, have succeeded in all but eradicating the journeying of British cattle across the continent - although welfarists and rights advocates remain mindful that such a trade could recommence. Moreover, and in a more contemporary context, transport campaigns have been pitched in terms of cattle journeys made within the U.K and between other E.U member states and the Middle East (figure 6.5).

In the first instance, welfarists and rights advocates remain concerned about cattle transported up and down the U.K to markets, alluding to how markets can be stressful and frightening places for calves - "strange animals, people, smells and sounds" (animal rights organization T); and in pointing towards the lack of training in how to handle animals among market employees, the overcrowding of pens, the rough handling (jabbing and poking cattle with sticks, hitting and kicking) and the lack of food, water and veterinary care available (animal welfare organization S). In the second instance,

welfare and rights organizations describe how cattle from Holland, France, Belgium, Spain, Italy and Greece are sent for slaughter to the Middle East, journeys that can take up three weeks. In 2002, for example, it was estimated that more than 250,00 cattle made this trip. The concern here is with the exhaustion, stress, dehydration, and injuries that the animals may experience leading to a high mortality rate (see also Gellatley and Wardle 1996; Gold 1995).

> ... .what we also decided to do more recently was to identify everybody involved in the live export trade - exporters, transporters, people on the continent - and one of the first things that we did... was to go to a place in Wales where [name of haulage company] operate. So we did speak to them and ask them, you know, "can you not consider what some of these animals are going through", and this guy jokingly said "well they're in trucks and we're not going to mourn at their funeral"... I came away thinking 'right, you're now a legitimate target in my campaign'... We've had a demonstration up there and bombarded them with emails... and we're trying to make the public aware of whose involved in the trade... all they [industry representatives, politicians] are trying to do is say 'we'll reduce journey times by thirty, forty minutes' and that just shows a complete lack of basic care. What about food, water? [...] We think that the port authority can do several things, like increase harbour fees... it's like if there's gale force winds, gut churning weather, it's at the discretion of the captain whether the ship sails, nobody else. So, whose got the animals' best interests here? So all we want them to do is address these issues and we want to know when these shipments are coming through so that we can monitor them
> (Tanya, media and public relations, animal rights organization U, Tuesday 20 May 2003).

The call here forms part of an attempt to join-up welfare practices across the continent in monitoring journey lengths - including campaigning for an 8 hour limit to be imposed on all journeys (animal welfare organization S) - or abandoning the transport of live animals for a trade in meat (animal welfare organization R).

Figure 6.6: Compassionate shopping?

(Images courtesy of animal rights organization U)

> Massacre would be an apt word for the commercial operation of slaughter lines, killing hundreds and thousands of animals every day. The distancing of a predominantly urban population of customers from the production of food has increased as meat has been sold and disguised
> (Andrew, chemical scientist, animal welfare organization Q, Tuesday 15 April 2003).

These campaigns, or orthodox locaters (production, calves, transport), are intended to (re)educate people about the ways in which animals are reared for food. On the one hand, this concern resonates in how cattle die, with welfare and rights advocates challenging the assumption that the death of cattle at the slaughterhouse is quick and painless. In particular, instances where electric shocks have not been properly administered, if at all; of animals incorrectly clamped in the conveyer and falling to the ground only to regain consciousness; the pain and distress that animals experience are all depicted; amid the high throughputs in slaughterhouses that Andrew identifies. Likewise, the call is for legislative change that would require all animals to be stunned prior to throat cutting (including religious slaughter), set a minimum stunning current for each species, having maximum stun-to-stick intervals and a requirement for both carotid arteries of the animal to be severed rather than current legislation that requires one artery (animal welfare organization S). On the other hand, Andrew reaffirms Martin's view (part 6.0 and 6.1) that the public are distanced from the food production system:

> Space on food labels is a much-contested terrain as various interests jostle for their particular interests. Other groups cash in by selling the symbol or leasing the logo…the farm of origin, the breed of cattle, the method of slaughter…this isn't revealed on the meat to the customer…such traceability would be imprecise if the purchaser sought the origins of the milk carton
> (Andrew, chemical scientist, animal welfare organization Q, Tuesday 15 April 2003).

> With children now they make dreadful things, turning meat into teddy bear shapes…I've tried to do something about this but haven't got very far. I made some calls to the manufacturers and they don't seem concerned that these animals have been ill, and had diseases, and gone along the line at the rate of knots…so what people are eating is just reconstituted rubbish

(Caroline, founder of animal rights organization T, Thursday 1 May 2003).

These quotations move us back to Martin and the cattle at Folly Farm. For example, Martin asserts that he is unable to make a living without becoming, and remaining, efficient as supermarkets continue to drive down the price that they pay (in pence per litre) for milk. This means, in practice, that he has to increase the number of cows in his dairy herd, use genetics and reproductive breeding tools (part 4.1), and concentrate feed (part 4.3) so that Amy and the other animals produce more milk. And yet, animal welfare and rights advocates query 'if consumers can be persuaded to buy other free-range or organic products?' This expression, of a 'moral menu', is accompanied by calls for the clearer labelling of food (the "teddy bear shapes") that recount the conditions in which the animal has been raised and itemize any residues in food deriving from the hormonal, preventative and antibiotic treatments given to that animal. Consequently, this leads welfare and rights organizations to call for trade rules that subsidize farmers whom practice holistic and sustainable systems of farming and whom choose to bred dual purpose cattle capable of sustainable quantities of milk and producing calves to be reared for beef. In this way, the movement of cattle through the food chain (veal crate, lorry, market, slaughterhouse) is problematical as campaigners seek to find ways forward that enable Martin to rear his animals in what are deemed to be more ethically acceptable ways (figure 6.7)

Figure 6.7: A humane alternative to factory farming: organic production

(Image courtesy of animal welfare organization S)

For some organizations and individuals, and in particular rights advocates, they query the need to farm animals at all in promoting a vegan lifestyle:

> still they give out the message that it's okay for me to eat meat and fish... they don't think about the whole power issue in using animals for food. Again, its that benevolent exploitation thing
> (Tanya, media and public relations, animal rights organization U, Tuesday 20 May 2003).

Binding these orthodox locaters with the liveability of cattle (prolonging life or managing death) together, however, is a common acknowledgement that humans should treat animals respectfully and care for them compassionately.

To summarize, the longstanding, iconic and influential role of cattle in farm animal welfare campaigns (figures 6.3, 6.4 and 6.5) appears to follow a life cycle approach. Accordingly, campaigns turn to focus on a series of stages that cattle pass through: birth (veal calf, cow-calf separation), life (on the farm, becoming food), development (transport to market, export) and death (slaughter, human diet). In so doing what begins to emerge are a series of battles as the birth, life and death of cattle become located within particular narratives about food production, methods of farming or the (future) non-farming of animals. I want to conclude this section by setting out two ways in which some of these campaign narratives are, perhaps unintentionally so, enveloped by strands of humanism.

Firstly, a food chain narrative is deployed (figure 6.6) such that farmers, supermarkets, fast food restaurants, haulage companies and slaughterhouses are deemed responsible for animal suffering and human consumers are asked to purchase with a conscience by putting organic, free-range or non-animal products into their supermarket trolley. This is achieved, on the one hand, as these organizations and individual advocates assert that they are acting on behalf of the animals (see also O'Neill 2001), often situating their work in science to suggest that they have an awareness of the animals' needs, sociality, treatment and living/dying environments. On the other hand, to impart these understandings to members of the general public, campaigns aim to be controversial, through presentational imagery and in drawing direct comparisons between the everyday lives of humans and animals – pregnancy (cow and calf/human parent and child); or particular events (the death of Jill Phipps or the treatment of the Jews in Nazi Germany). Subsequently, humans encounter cattle as a product, a barcode to be scanned at the checkout - an animal that should have been raised in lush, green fields (figure 6.7). It is not my intention to suggest that these connections are not important, for they do have a moral dimension in attempting to unravel human oppression and control over cattle; I do, however, find them problematic because they lead members of the public to pass responsibility for the welfare of animals back to such organizations and individuals through monetary contributions and buying products accredited by the farm assurance and certified production schemes. Modestly, this provides humans with a partial view, as Amy and the ways in which she is being reared become hidden amid competing claims about appropriate and inappropriate agricultural systems. This points towards a number of issues relating to why keeping

cattle alive (to consume or conserve them) matters, what welfare is (for humans or the well-being of animals themselves?) and what forms of welfare (institutional, individual, practical) might preside over the ways in which cattle live out their lives.

Secondly, I am left pondering where these ideas surrounding the welfare of cattle might lead. In particular, the public are confronted with the notion that the solution to intensive means of production (so-called 'bad' welfare practices) can be found in extensive, organic and free-range systems (deemed somehow better). But what is interesting here is how these ideas are intertwined with notions of 'wild cows' living in 'natural environments' (see also part 1.4). In this way disparities emerge between factory or intensive farming and (pre)domesticated cattle:

> We'd be happy if everybody turned vegetarian overnight and then these animals could live in sanctuaries until they died…so eventually these animals would die out and then we could get back to the way these animals used to live, you know, get those animals back to the environments in which they used to live
> (Tanya, media and public relations, animal rights organization U, Tuesday 20 May 2003).

Reflect for a moment on the ways in which the public are led to believe that the cattle in figure 6.7 are living out their lives in a 'natural' way and compare this to the imagery in figures 6.3 and 6.4. In this regard, the communication of ideas omits a sense of the complex nature through which Martin practices animal husbandry. Amid this campaigning I am left wondering what these organizations and individual protesters are calling for - cattle that live out their lives in ways no longer influenced by domestication, artificial selection, human action?

It's damp, cold…straw sprinkled everywhere.
Sitting on stale hay…five chickens at our feet.
The barn is a vast, echoing space, and yet the animals' actions are repetitive…the chickens, silently bunch in a group, climb on top and over one another…feet bent – as though they have broken limbs, trying to take a step, collapsing. Seeds and grains scattered on the floor as they nudge, 'peck' each other.

In a barn with Dominic, Isobel and Tobias and five chickens
taken from a local battery farm, Saturday 13 September 2003.

The fieldwork notes here indicate one of the main consequences of this predominance of understanding in highlighting the failed abilities of animals to cope when taken out of intensive farming systems. Crucially, these notes also reverberate elsewhere, to an equally valid agenda – towards the lives of individual animals. What might happen if one seeks to evacuate animal welfare from this starting point? In this way, the descriptive argument that I want to draw out is that there

may be hidden facets within these orthodox (food chain driven) markers. Moreover, I want to attend to how particular human-cattle and cattle-cattle encounters on Folly Farm and in other spaces, might allow a (re)placing of animals in campaign narratives.

6.3 Witnessing ethics: animalian fleshiness and individuality

Drawing out the location of this ambivalence is important in moving towards breathing life into pressing matters of ethics – towards an ethic rooted not only *of* but also *for* the other (after Cloke 1999). For what has been achieved in the chapter so far is an understanding of the problem that notions of relationality bring, and the institutional sites and organizational set-up through which the welfare of cattle is being fabricated, thus debating what welfare ought to be and what form(s) it should take. I am, however, left wondering how one might traverse between the aggregate scales that much ecological and environmental work presupposes and more relational forms of ethics. What, for example, are the connections between individual animals (Amy), herds, species, institutions and welfare and rights advocates in shaping farm animal welfare? I am thinking here, in particular, about how societal provision for the welfare of animals might be reconciled with (Martin's) attempts to meet the needs of individual animals. Crucially, this is to contemplate what Amy's experiences of welfare might be and how she might 'converse' in what happens to her, in ways that bear upon her treatment and in how she lives out her life.

This is important for there is, I believe, something more to come. I want to argue that a rupture is initiated when one encounters an animal being, a rupture that, if described, opens out novel ethical considerations through attending to the lives of animals themselves rather than the human orchestrated lives that have been designed for them. Above all this requires us to think about what is going on; to begin to chart the hidden, forgotten, and intangible human-animal presences (and absences) that affirm the relational approaches and orthodox locaters outlined in the previous sections; to (re)turn, then, to Amy, Beatrice, Barbara and other cattle at Folly Farm. In so doing, what I am calling for is an appreciation of animalian otherness that is emotional, connected and committed (after Cloke 2004). To move ethically beyond 'the human' requires one to make a transition from human-animal relations, to animal-human relations and animal-animal relations[52]. Significantly, this shift points towards opening up a creative space, a space where one might be able

[52] For an example of geographical work where humans strive to imagine themselves in the place of an animal see Gullo et al (1998) whom raise questions about how animals (cougars) construct people, the diversity of their views and how they alter their behaviour according to human activities. Moreover, I want to distinguish my work from such an account according to the ways in which I am attempting to move beyond a fixed human reference point. For in the empirical materials that follow I aspire to document how individual cattle are living out their lives with and through each other. This is to adopt a view of ethics which values animals as others beyond any kind of reciprocal relationship that they might have with humans (adapted from Jones and Cloke 2002:221).

to apprehend different worldly contexts, one where the doings, joys and suffering of Amy and other individual animals might come to the fore (see also Philo and Wilbert 2000:13-25).

> The ethical invisibility of the *individual* non-human other is a key factor in the spatialization of ethical relations and in how such issues should be addressed... it can be seen that all of the many differing material and imagined spaces of the world carry differing (un)ethical freights which need to be drawn out and addressed when questioning human-animal relations (Jones 2000:270, emphasis in original).

But how does one attend to an outlook on relations actualized at an individual level? I offer two starting points. Firstly, mapping the (un)ethical freights in human-animal encounters leads one to unravel the presences (and absences) of animals in particular places (Jones 2000:284-285). The call here is to excavate how relational ethics are situated (Jones 2003), resonating and grounded in the particularities of place, sites, contexts (Jones and Cloke 2002:111). Throughout, and as a witness to that which I am trying to present here, this chapter is enraptured by Amy and her life on Folly Farm. For it is through Amy, perhaps, that one can turn away from accounting of how worlds are ordered and built, to chart instead how non-humans in place object to the human stories being told about them (see part 2.4). Moreover, animals are seen as already dwelling inside, with and among humans, not only in terms of the wider economic, political and ecological networks in which they are immersed, but also unfolding as individual beings in places in ways that summon up responsibility (Clark 1997; for examples see Palmer 2003a 2003b; Jones and Cloke 2002; Whatmore and Hinchliffe 2003a 2003b; Wolch 2002a; Wolch et al, 1995). And I am reminded, in particular, of Rosie's decision to block Barbara's passage to Amy. It is here that (individual) beings have subjectivities that become apparent through practical ethical expertise (encountering) - "turning these spaces inside out, revealing the nature of what unfolds in them" (Jones 2000:284) - rather than abstract ethical deliberations (Hinchliffe 2003:222). In this way, I want to position dwelling as a way of apprehending the embodied presence of animals that are often hidden from the conventional analyses outlined in the previous section. For it is by opening up the spaces of human-animal encounter that are closed off from the conventional ethical gaze (Jones 2003), by signalling the micro-practices and politics of well-being that are negotiated in specific sites of everyday living - the mundane locations in which cattle dwell (of Martin and the herd at Folly Farm) - that alternative human-cattle ethical relations emerge.

Secondly, and following on, one needs to pay credence to the role of emotions in shaping, and being shaped by, animal-human and animal-animal encounters in place. For there are particular kinds of responsibilities and burdens that humans and animals might assume because of who and where they are situated. Importantly it is worth noting that human-animal relations are driven by a mix of emotions which span from reverence to revulsion (Jones 2000; see also Buller 2004), for as the examples in the previous section illuminate, airports and docks, haulage yards and supermarkets can

all become spaces of protest and anger. With this in mind, within geography and across social scientific disciplines, work is becoming sensitive to the emotional dimensions of living in the world (see Anderson and Smith 2001; Bennett 2004; Laurier and Parr 1999; Widdowfield 2000). Regarding human-animal relations, there is an acknowledgement of the role of emotions in (human ways of) knowing, being, doing and how these responses inform (human) thinking about ethics and (animal) welfare (for examples see Convery et al, 2005; Wilkie 2005). My focus in what follows is with how the places in which cattle find themselves dwelling become familiar and unfamiliar locations of fear, anxiety and suffering. Thus, my attention to the experiences of the animals themselves in place is underpinned by difficulties, for the existence of emotions in farm animals remains a controversial issue (see part 1.13; Barnard and Hurst 1996; Boissy and Bouissou 1995; Hemsworth and Coleman 1998; Rollin 1989; Rushen 2003). With this in mind, my engagement with emotional geographies is intended less to signal these kinds of debates and more to articulate the interests that human-cattle (Martin/Amy) and cattle-cattle (Rosie/Amy) have in the well-being of one another that is fostered in practical ways.

In what follows I document four moments. These accounts derive from spending time with cattle during observed periods of fieldwork – on the farm, at a market, and in a slaughterhouse. These examples lead, I think, one to query how we might become (more) emotionally reflexive about animal needs in opening out the orthodox locaters in the previous section. For it is by attending to what happens, and what is happening, in these micro-spaces that lead to changes in subjectivity, in particular, who we (as humans) feel able to be in responding to our encounters with individual animals.

Moment 1: ***Becca's illness***

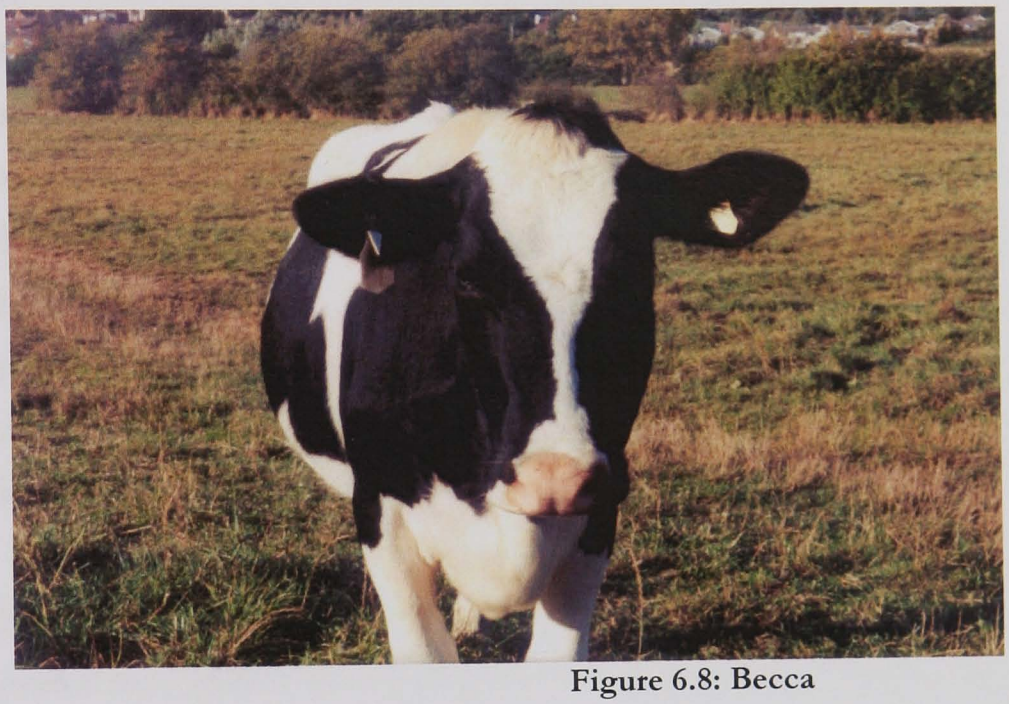


Figure 6.8: Becca

Becca hasn't been feeding properly for the past few days and Martin's been trying to coax her into having some apple. She walks slowly towards me, her posture's changed, and her back is slightly curved, making her head seem lower. Martin takes her inside the shed…gently lifting up her front left foot. It's swollen, reddened - her toes have begun to separate apart. A fine crack has appeared across this area and a yellowy; wax like discharge is seeping out of what appears to be an open wound. It smells a little like rotting food and cheese blended together. It's surrounded by a darkened brown area and small circular sores - little blood spots are dispersed throughout.

…

A few hours later and the vet arrives. He watches Becca walk around the pen, ever so reluctant to put weight on her foot. She stops and they both walk towards her…Martin stretching out his right arm and reassuring her "come on, everything's okay". The vet bends down to lift her foot while Martin strokes the side of her back…the vet diagnoses interdigital phlegmon and prescribes an antibiotic that she should respond to within twenty-four hours.

…

Martin picks up the prescription, a blue aerosol called 'Alamycinl'. He takes the lid off, the noise stirs Becca, her ears have flicked back and she lifts her head slightly…Becca stands in the corner very still without having to be held while Martin sprays the can over her foot, almost immediately a clear film starts to form. Martin and I wait with her for a few minutes, ensuring that she doesn't move around too much or get her foot wet.

Fieldwork notes, Wednesday 14 August 2002.

Reflecting on this moment, I found it difficult to know quite what to do, to stand back and pragmatically document Martin's conversation with the vet accepting this as insightful data or, my gut reaction, to remain with Becca in the shed? The former response is clinical in its approach. For to write down 'word for word' the discussion may fit the litany of *production* diseases (Mastitis, lameness) and metabolic frailties (ketosis, hypocalcaemia) that lead to the premature exhaustion and culling of cattle that pervade animal welfare and rights campaigns. In another way, I might have charted the use of medicines in farm animals, noting how the vet diagnoses, medicates and monitors Becca's condition. Or, further still, queried how long the Almacincyl might remain in Becca's muscles and tissues thus prohibiting her milk from entering the human food chain (part 5.2). Each of these responses, however, leads to representational systems of meaning where human beings do not bear witness to a sick animal on a farm (Becca), but rather this state of affairs become vacuumed and sealed within a particular event (a piece of legislation, the publication of a code of practice, or visual materials documenting human atrocities committed against sick animals). I do not doubt the validity of these statements or campaigns, but I also believe in forming understandings from a different ethical point, one open to the gaps of knowledge cloaked within overarching concerns and points of medicinal contestation.

The latter, and my actual response, testifies to that which is intuitively felt and experienced by Becca, Martin and I, even if our (animal/human) responses are not necessarily understood. Martin suspects something is wrong when Becca's appetite suppresses, when she smells yet decides not to taste the apple, when her back appears slightly arched. For Martin and I are familiar with the ways in which Becca greets us, of how she wanders over (sometimes with Ruby), often hesitating if you extend your arm. In this moment, however, Becca's ways of standing, walking and moving, indeed her whole demeanour has changed; Becca is quieter and not as energetic or active in her behaviour. It is Martin who notices her listing, taking her into one of the sheds, smoothing, touching and talking to her, lifting her foot, deciding to call the vet. And it is here that Martin conveys an emotional response in becoming sensitive to how Becca might be feeling - querying why he did not detect the seriousness of her condition before: how did her foot become so infected, will the course of antibiotics work, and is Becca in pain or any discomfort?

> Those sores look painful... how long do you think they've been playing her up?... Once we've sprayed the stuff on how long do you think it'll be before she's alright... back to her normal self?
> (Martin dairy farmer at Folly Farm, Wednesday 14 August 2002).

This moment identifies and raises quite different questions about the way in which Becca is reared and her access to medical treatment (compared to part 6.2). Are there, for example, more practical steps that could be taken by Martin (and other farmers) to keep Becca (and other cattle) healthy, to reduce their risk of infection? What veterinary treatments are available to Becca and other cattle with

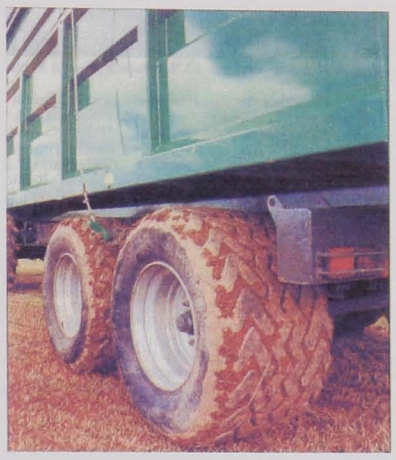
an infected foot? In attempting to respond to these questions one might extrapolate upon how Becca acquired her injury - from standing up and lying down, a sharp object, or cut from sticks and stones? This raises issues relating to the environment in which Becca is kept (are the cubicles in the shed, the parlour, sufficient to accommodate her size and active disposition?). This moment also leads one to contemplate the veterinary provision and care that Becca receives. For Martin noticed the deterioration in Becca's appetite over the course of previous days and yet it was not until Becca began listing - when the soreness, redness and pus became apparent - that he decided to call the vet. This reluctance stems from the financial cost of requesting the vet and prescription medicines. Specifically, Martin considers Becca to be a young animal that does not produce high yields of milk. In comparison, if Margaret, Yazzey, Barbara, Melissa or Belinda (high yielding animals) had shown signs of this injury then Martin would have called the vet at an earlier stage.

> Vets were having to shoot cows that should have been shot last week because the farmer could not pay... fewer farm visits, fewer calvings, more cullings and bigger units all contribute to a reduction in veterinary work and to poorer welfare
> (Nathan, research assistant, department of veterinary medicine, university 9, Tuesday 9 September 2003).

This moment opens out not only the difficult decisions that Martin has to make in deciding when to seek veterinary advice, thus illuminating how he does not treat all cattle in the herd the same, but also connects to wider issues relating to the lack of veterinarians choosing to specialize in large animal practice (EFRA 2003) and a reluctance by pharmaceutical companies to invest in developing drugs for farm animals (personal communications with pharmaceutical companies G and K and government office 2).

'Finding' Becca, and other cattle, amid these 'societal responsibilities' is important. For getting to grips with this in the context of farming might lead one to query if the acute inflammation of her foot will predispose Becca to foot problems and lameness and affect her future milk yields. But in the midst of Martin's concerns about Becca's future in the herd, something else begins to unravel. I am thinking here of how other members of the herd at Folly Farm treat Becca differently. Margaret, Melissa, Barbara and Yazzey, for example, allow her to squeeze past them and access the water trough and in the field Ruby does not chase her but stands alongside her. Moreover, do other cattle identify Becca's ill health and perceive her vulnerabilities? In this way, the encounter here conjures up a sense not merely of but also for the other, as Martin and the other cattle appreciate what has meaning and importance to Becca (after Cloke 2004). For Becca is not separated from the rest of the herd and taken to recover in the shed alone, instead she is offered apples regularly and let out in the field with the rest of the herd to continue spending time with Ruby. And it is with this support that Becca is able to go on, to cope.

Figure 6.9



(Image courtesy of company 11)

Jocelyn's a product and that's what agriculture is, and that's what farming is. When you have an animal, even if you haven't had it very long, it's inevitable that it's going to leave the farm, you have to realize that when you're a farmer
(Martin, dairy farmer at Folly Farm, Monday 12 August 2002).

Moment 2: *ramp*

The lorry arrives and backs up into the yard.
Bella and Jocelyn are in the shed waiting.
The doors open and the ramp is lowered.
Martin sprinkles clumps of straw on the ramp and across the lorry floor.
"Come on" he calls as he moves the metal barrier across the entrance to the shed.
"Come on" (Martin is shouting).
Martin and the lorry driver move inside the shed so that they are standing behind the cows…Martin begins slapping the cows on their backs with his hands, the lorry driver hitting their bony backs with a wooden stick…Martin making a noise that sounds like 'hey' but is all garbled and fluctuates in volume.
"Go on" (Martin's tone is becoming forceful, he appears frustrated)…ever so slowly Bella and Jocelyn begin making their way to the lorry, …closer and closer until they reach the ramp…Bella moves first, tentatively up the ramp - almost sliding with the steep incline, she turns and Jocelyn now follows her, much slower, each footstep vibrating as her hoof penetrates the straw and makes contact with the metal.
They close the door and lift the ramp.
Scratchy sounds as Jocelyn or Bella place their hooves on the floor.
The driver gets into the lorry and starts the engine.
…
What might Bella and Jocelyn have experienced on their journey: off-balancing motions that lead them to stumble or be thrust around as the lorry driver accelerates, decelerates and stops? What might Jocelyn and Bella's reactions to the engine sounds, the view through the slats, the concrete road, buildings and traffic, be? How long will it take them to reach their destination and, importantly, how will they be treated at the end of their journey as the ramp is lowered?

Fieldwork notes and diary entry, Thursday 15 August 2002.

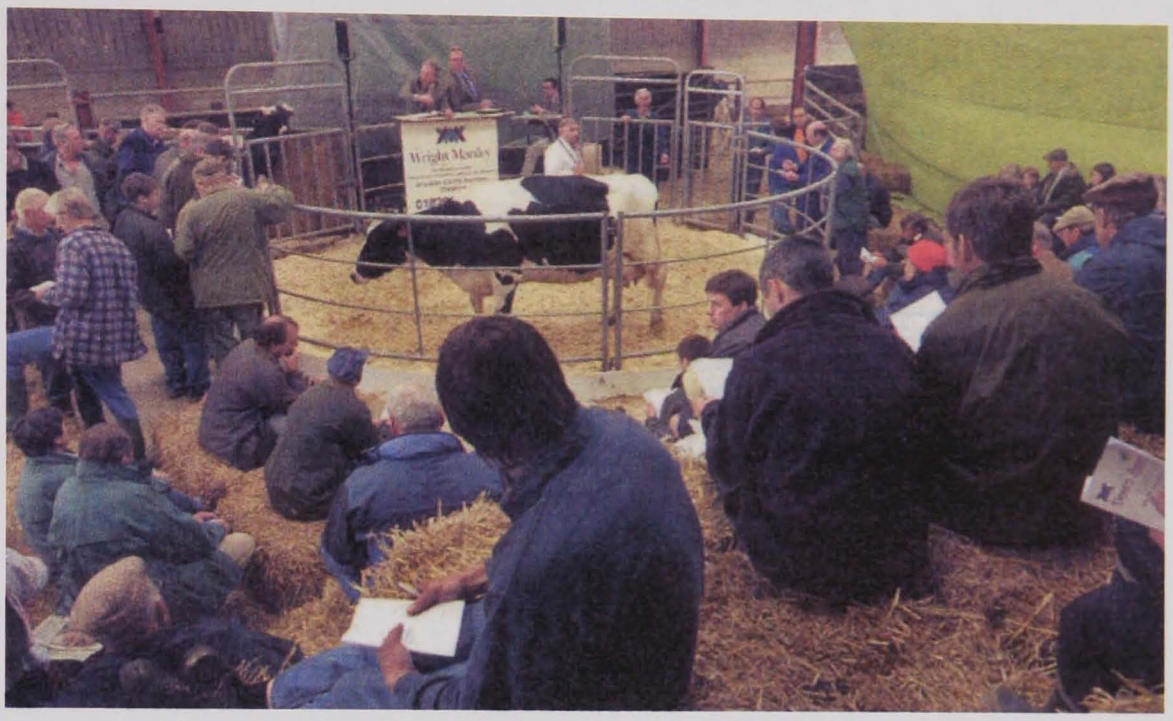
Animal welfare and rights organizations draw attention, quite rightly, to the long distance journeys that animals are often made to endure (see part 6.2). These are not light matters, for these organizations in identifying *cattle journeys* across Europe, North Africa and the Middle East, document the use of cranes to hoist animals up from the ships hold, the breaking of hips and legs, ritual sacrifice and bleeding to death; as part of a call to enforce and ratify European animal transport legislation and to establish a trade in meat and carcasses.

But these accounts, with their tendency to focus on legal requirements and regulatory change impelled by demonstrations at ports and docks, are full of holes. In particular, they miss the reality that I am seeking to convey in the moment above: the immediate experiences of Bella and Jocelyn, the process through which they enter the lorry and Martin's practices. For within universal narratives further questions relating to the ways in which farming practices necessitate the movement of animals over the course of their lives are overlooked. With this in mind, it is Martin who decides when an animal is to leave Folly Farm, according to its 'productive life' (ill-health, old age, a decline in milk yields, to generate income etc.), and its destination (agricultural show, market, slaughterhouse). Furthermore, within the business-orientated decisions that Martin has to take,

something else begins to emerge. I am thinking of Martin's sadness when an animal leaves the farm, and, in particular, how he places straw on the ramp and lorry floor for Bella and Jocelyn (and other cattle when the time comes for them to leave Folly Farm).

Importantly, this moment also depicts how Martin and the lorry driver have difficulty getting Bella and Jocelyn into the lorry, merely getting them onto the ramp becomes an intense, lengthy ordeal. Here I am contemplating that which is otherwise unwitnessed: how Jocelyn and Bella sense and react to each other - waiting in the pen, hearing the lorry approach (do they realize that it is intended for them?), walking slowly towards the ramp (Jocelyn pausing and waiting for Bella), going into the lorry (moving from muddy yard to straw, wood and metal flooring). This is not the first occasion that Bella and Jocelyn have been transported in a lorry, is their reluctance a learned source of anxiety? What sounds, smells, sensations, (motion sickness perhaps) will they (be made to) tolerate in this temporary yet unfamiliar environment? The implications of this lead one to think about the use of sticks, the structure of the ramp (Bella and Jocelyn stumbling amid the steep incline) and the layout of the lorry (granting animals more room and in sight of one another). As the lorry departs up the lane, and Bella and Jocelyn's footsteps across the lorry dissipate, their absence will be felt in the herd in the days that follow; and Martin has passed responsibility for their well-being on, the placement of straw his final act of care towards them.

Figure 6.10: Cattle auction



(Garner 2002:28)

It's very difficult....we owe [name of equipment company] for repairing the tractor, [name of feed company] about £900 and we've still got last year's silage bill outstanding...we need to have some cash flow so we've decided to sell some of the cattle to try and pay some of our bills. I mean the market at the moment is, as you probably know, depressed...but in the future god alone knows what's going to happen...we're sorting out probably four or five cows that we don't really want....a sad day but a necessary one
(Martin, dairy farmer at Folly Farm, Tuesday 10 December 2002).

Moment 3: *selling animals*

Shed

…each animal has a circular sticky white label placed on its back - it's 'lot number'…the cattle are being kept in groups of between three and twelve animals, some pens segregated according to groups of cows, calves and bulls; other pens containing cows with calves…there is much activity and interaction among the cattle…before I walked into the shed I could hear them - a collective deep mooing sound emanating from several animals…now inside the cows and bulls make a series of small gestures - turning their bodies, chewing the ear of another cow, taking small, drawn-out steps to reach the corner of the pen; the calves are nuzzling straw, licking each other, touching the bars, standing alongside or reaching through the bars to touch other calves.

Figure 6.11: calf at market

(Image courtesy of animal welfare organization S)

…several people are wandering through the shed, glancing in some of the pens.
…a farmer enters one of the pens containing calves to prepare an animal for sale, brushing its back and tail…two other calves walk up and touch the brush.

Ring

A cow and calf in the ring; controlled pacing, the calf occasionally nudging into the side of the cow…often walking slightly behind the cow but always following her in a circular motion…the auctioneers hammer sounds and the gate swings open…the cow leads the calf down the ramp to the alleyway.
…
A calf in the ring, remaining still, it's front legs splitting apart, head stooped…a market employee enters the ring, placing his hands on the calf's back, pushing it round the ring…after a few minutes of this repeated action the animal appearing still wobbly and unsteady on its feet.

Fieldwork notes, Wednesday 28 May 2003.

Happenings

Several calves 'escaped' from one of the pens today, the catch came loose and they emerged one by one, slowly, reluctantly at first…after a few minutes a man in a white shirt walked by and made arm gestures to an auctioneer…the auctioneer walking towards the pen and the animals fleeing - running in all different directions: alongside the pens, outside the shed, into the yard, kicking their hooves and pinning their ears back.

Fieldwork diary entry, Thursday 19 June 2003.

…a man in blue overalls and a yellow t-shirt approaches one of the pens, a cow walks towards him then stops, she twists her head and stares at him…the man reaches over one of the bars and slaps his hand down on her forehead…she makes three sudden jerking motions forward, her head sinking and rising, a flick of the tail, the bars chiming as her body plunges and impacts…the man steps back from the pen, glances at me, shakes his head and walks away.

Fieldwork notes, Wednesday 28 May 2003.

In these spaces of auctioning and dealing (figure 6.10 and moment 4) animal rights and welfare organizations recount two tales. The first tale speaks to cow-calf bonding and succeeds in positioning young animals as 'innocent victims' (figure 6.11). In this way, it is alleged that calves are often sold within seven days of birth (before they receive their fill of colostrum) resulting in their immune systems to be inadequately primed to withstand the stress of being taken to markets, often over a consecutive period of days without adequate rest (animal welfare organization Q), to be roughly handled by market employees, before making their way across the continent and into a veal crate (figure 6.4). The second tale illuminates a disparity between the ways in which calves and cattle are treated at markets. For the use of sticks and other implements to hit animals is prohibited on calves and there are calls for this ban to be extended to include all adult animals. But in these narratives the market becomes a transitory space, between farm and veal crate, farm and farm. How might the edges of the ethical relations characterizing these tales be redrawn? Specifically, how might this lead humans to rethink the ways in which animals are sold at this place?

The very artifice by which animals arrive at the market is set up according to a notion of their sociality. Note how cattle are kept in groups, or within sight of another animal (facilitating this by using a mirror so that a lone animal is able to view its own reflection if not another animal!). To exemplify this further, moment 3 attends to the ways in which cattle interact with each other in this place, signalling how their actions may vary according to whether a cow is with her calf, or a calf is in a pen with other calves or alone in the ring. Here we have a series of descriptions that signal the apparent composure of cattle and the disorientation of young animals (the lone calf not knowing what humans expect of it in the ring) and where things can, and do, go off in unforeseen directions ('the escape'; a cow's forceful reaction to human touch). Stalling here, I am left querying if cattle have a bodily awareness, memories, of what happens at a market. Moving on, how might the actions of cattle themselves lead one to question acutely and personally what it is to be a cow, calf or bull at a market? Firstly, perhaps this moment strengthens the importance for cattle to remain in groups, or concurs with animal welfarists who claim that young animals should not be taken to market. Secondly, it may point towards how calves should be taken to market with a cow or other calves from their farm or holding. Excavating between these lines of thought, I would argue that a possible solution to the disorientation and anxiety that the animals may experience can be found amid something that looks preliminary to it - to hold auctions on the farm on which the animal has been reared (events that took place in the months that followed FMD) or, in the longer term, to post animal details (descriptions, images and video footage) on a market based website, thus removing the need for cattle to journey to market.

At the slaughterhouse

> I've chatted to a lot of slaughterers since Foot and Mouth and they tell me that animals do not sense death. When they were killing enormous amounts of cattle, as they were shooting them, the animals that were alive were actually walking up to the animals that were dead. Now animals haven't got the same intelligence as human beings, this doesn't mean that we don't have to respect them, as we respect human beings... I mean that's what a farmer does, respects his animals. But I mean cattle... they haven't got the same sense of feelings, the same sense of smell... a totally different species of animal and it just so happens that humans are different and we do, some would say, just happen to be more intelligent... have more brains
> (Martin, dairy farmer at Folly Farm, Tuesday 2 July 2002).

Moment 4: ***holding pens***

Figure 6.12: slaughterhouse

Bright sunlight shining in as I enter a dark tunnel with pens either side. These 'holding pens' are much larger than I had anticipated…they've been hosed down, the concrete ground is very slippery; water is dripping off the walls and bars. Several of the pens have groups of cattle in them - between three and five animals.

…

Initially it is quiet, but now mooing noises are echoing through the building, oftentimes dislodged by a background hum of banging, grating, a pumping sound, chains, machinery… I find myself drawn to a pen containing a single cow, drawn to it because of the bellowing sounds that this animal is making, sounds unlike any other mooing in this place…unlike any mooing sound that I have ever come across. She begins by making a very low pitched noise that becomes louder and louder, her body juddering as she reaches a crescendo…then stops. Pausing for a little while…she commences pacing in circles, her eyes widen, moving her face from side to side and looking round, ignoring me as I walk towards her pen… nor is she standing in the corner of her pen nearest to other cattle. I am left wondering, then, if, perhaps, she is trying to figure out the environment in which she finds herself.

…

[Twenty-five minutes later], the gate opens, and an employee at the plant begins coaxing her along the tunnel, he's silent but digging a white electric prod forcefully into her back, she walks with great hesitation, pausing after each step. At the end of the tunnel a door slides behind her and she is gone, off to the next stage - up a wooden ramp to the top of the chute - will she dither, panic?

Fieldwork notes, Wednesday 30 July 2003.

(moment 4 continued)

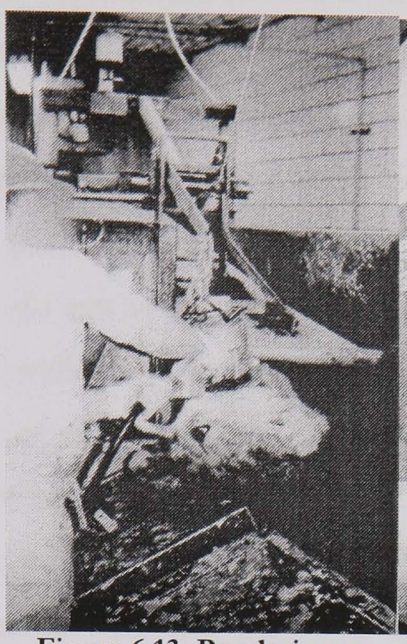


Figure 6.13: Rendering a cow unconscious (Eisnitz 1997:192).

Figure 6.14: Hoisted on to the moving overhead rail and transported to the sticker (Eisnitz 1997:192).

Figure 6.15: Skinning a a carcass (Stull and Broadway 2004:84).

I feel out of my depth, numb, as I contemplate the cow becoming lifeless. I've tried to reason with myself - as I only have access to the holding pens, I don't have to face or acknowledge what is going on here - was I looking a dying cow in the face? Is she aware, or does she fear, that she's going to die?...traces of the plant - an overwhelming smell of grime, faeces, blood and guts - remain embedded in my clothes, hair and even on my skin.

Fieldwork diary entry, Wednesday 30 July 2003.

This reflective account may be poorly narrated, indeed I find it painful to think how a cow is making her way along the tunnel and up the ramp, to be stunned and rendered unconscious, her throat cut so as she bleeds to death; but this moment also acts as a prop for witnessing. For as social scientific work continues to explore 'ulterior' practices at the slaughterhouse including employee welfare and working conditions: the speed of the conveyer belt, the partitioning and repetitive nature of tasks, and the need to avoid kicking hooves (Eisnitz 1997; Gouveia and Juska 2002; LeDuff 2003)); and animal welfare organizations acknowledge the short term suffering that animals may experience (prodding, stunning, dismembering piece by piece), such work is limiting but not the limit. It is limiting because an emphasis is placed on the final elements of slaughter rather than what happens prior to slaughter; and not the limit for here we are led into an encounter with that which is somewhat lost - the intricate practices of a cow in a pen.

But what might this immediate experience in the concrete moment do in recomposing a picture of what happens at slaughter? Firstly, and crucially, I think cattle waiting in these pens are transformed

from dead tissue. It is a question of gesturing towards animal existence and feelings in this place. What might the animals be subjected to and how might they sense this cold, dark, rank, and strange place? As the animals remain in pens for fifteen minutes or more are they aware of their hopeless situation - that they will die? Some members of the veterinary profession, for example, would refute these questions in arguing that farm animals do not fear slaughter because they have no prior experience of this, rather it is the novelty of the slaughterhouse itself that may cause them stress and anxiety (Broom 1988). Following on, Martin (the dairy farmer at Folly Farm) also concurs that animals do not sense death. I, however, remain unconvinced. For example, could it be that living animals walked up to the dead animals instead of attempting to evade and flee culls during FMD because of their relations with, and concern for, each other? Is this why the cow in a holding pen does not interact with the cattle in other pens? In other words, this is about remaining mindful that humans will never be able to fully apprehend how cattle sense and react with each other in this place and thus the task that lies ahead is to find ways forward that do not, however unwittingly, dismiss animalian orientated perspectives.

Secondly, and with these doubts in mind, I think this moment speaks back to the architecture of the building. The slaughterhouse pictured in figure 6.12, for example, is set off from the main road and nearby primary school and housing developments, thus disguised as part of the landscape with few clues as to its identity apart from the arrival of transporters and refrigerated lorries. It is this point that leads some animal rights organizations to argue that the location of slaughterhouses should be publicized and the site of killing viewed through glass walls. The emphasis here, however, remains on humans, and this leads me to query what technological and aesthetic dimensions could be changed at this place so as to take into account of the needs and well-being of the animals themselves. Such dimensions might include soundproofing against loud, grinding noises, improving the flooring and lighting, providing food and water, and prohibiting the use of prods (see also Grandin 2003a 2003b). Perhaps this vibrates from the slaughterhouse and back to farms. On the one hand, animal welfare organizations are campaigning for animals to be slaughtered at the abattoir nearest to the holding on which they have been raised. On the other hand, I am left contemplating whether it might be feasible for animals to be slaughtered on the farm. In the poultry industry, for example, trials are being conducted on mobile slaughter units (Bohrer 2005). Or perhaps this moment supports a wider call for changes in agricultural and food policies (i.e., ending the thirty month rule, lowering milk yields per animal) thus leaving cattle to die of old age and then enter the food chain? Finally, perhaps these questions will be rendered uninteresting if animal-free meat (after Easterbrook 2002), where meat cells are extracted from an animal and cultured to grow under controlled conditions in laboratories, becomes the future façade of food.

In this section of the chapter I have explored how particular places, and the human practices towards animals therein, lead environments to become sources of care, fear, anxiety, and stress for cattle. I have also sought to connect these moments to the life-cycle approach of animal welfare and rights campaigns (part 6.2), valuing these empirical materials for their abilities to often capture that which exceeds or remains unacknowledged.

On the one hand, this material draws attention to the current constitution of farming and whether this is as it should be in querying how sick animals are cared for, why and where animals are transported, and how they will be treated at the market or slaughterhouse. This is important on two levels. At one level it responds to legislative (and non-legislative) guidelines and frameworks in highlighting the provision of veterinary care (is a National Health Service (NHS) for animals required?) and in rethinking the layout, design and specifications of transporters, slaughterhouses and markets so as to take animal needs into account (i.e., the desire to remain with other animals, the importance of space, food, water and rest). At another level, these moments speak back to many animal rights activists whom consider (Folly) Farm a death camp. It is by spending time on the farm with Martin in his everyday practice that one is able to identify his micro-practices of care towards the herd: the placing of straw and administering of medication, to his more mundane and subtle acts of checking on animals, touching and talking with them, giving them pieces of fruits and vegetables. On the other hand, it might be worthwhile to contemplate how cattle lives would be different if they were not reared for food. Would cattle, for example, live out their entire lives on a single farm, dying of old age after fifteen years or more? Moreover, each these perspectives unravel in terms of which ethical arenas (food/farm, non-commodity) and to whom we entrust with the well-being of cattle (farmers, veterinarians, slaughterhouse and market employees, lorry drivers, members of the public, politicians, animal welfare and rights organizations).

Significantly, I do not wish to engage directly in these debates. This is not to say that the discussions taking place here are not important, more that the empirical materials I offer are concerned with intervention; with exploring the conditions in which individual animals are living and dying as part of an attempt to evoke the production of different modes of existence. Essentially, my problem with debates over the constitution of farming, or whether to rear animals for food at all, is the tendency to focus on humans rather than animals per se. Ultimately, I strongly believe in a different focal point, one that questions whether cattle have opportunities to express their creaturely characters - their *cattleness*, and how, therefore, we (humans) might celebrate these animalian 'competencies': the relationship between cow and calf in the ring, other members of the herd responding to Becca when she is unwell, the poignant instance of a cow in a holding pen; the importance of attending to the sadness and worry that some of these animals might have felt.

6.4 Conclusion: a (different) 'ethics' of cattleness?

In this chapter I have explored some of the relational ways in which animals have figured in ethical communities; charted how animal welfare has become an important issue by describing the campaigning activities of animal welfare and rights advocates; and documented moments on Folly Farm with individual animals that unravel these understandings. In this way, I have illuminated how Amy (and other individual animals) become framed according to an intersubjective conception of agency (part 6.1), framed as part of an attempt to establish a set of reliable, valid and repeatable monitoring standards that can be implemented and enforced, and framed as a set of consumer choices between different food products and their accompanying logos (part 6.2). My intention in so doing has been to infect these framings by pointing towards a set of everyday practical encounters between a farmer (Martin) and individual cattle.

Indeed, much of this thesis has sought to locate the ways in which humans intervene in cattle lives, in the first instance setting out the conditions in which cattle are reared for food, medicine, to participate in agricultural events etc., in the second instance highlighting the ethical and political consequences of so doing for individual animals. This emphasis, on the individual cow, bull or calf, is important in terms of attending to that which is lacking in much biological and social scientific work. This underdevelopment persists for a variety of epistemological and methodological reasons; not least the desire of the researcher to make scientific claims without resorting to anthropomorphic interpretations (see parts 2.1 and 3.1), so as to provide policy-makers with acceptable data in a short period of time (parts 1.13 and 3.1); or stemming from a fear of inadequacy, or to avoid trespassing on other academic disciplines. My response has been to provide detailed accounts of animal lives that are not encumbered by such concerns. For ultimately this might lead one to reinvent and reinvigorate concepts of welfare that hold on, however fleetingly, to individuality within animal-human, animal-animal encounters. In closing I want to reverberate back to (re)present some of the tales of individual cattle that have marked this thesis (box 6.1), however anthropomorphic and warily that these accounts may have been received.

Box 6.1

Over a four day period ***Rosie*** *and* ***Jasmine*** *'bonded': Rosie supporting Jasmine in her attempts to walk and licking slime off her body; Jasmine nudging, grunting and copying Rosie. And yet four days later these licks and nudges become but a bodily memory as they are separated.*

Yazzey *was diagnosed with mastitis in December 2002 and given a course of antibiotics, her milk unable to enter the human food chain. What is it like to have a full udder that is painful? To know that to relieve the pressure you have to have your milk extracted, but as that milk is pumped you have difficulty standing still, the cups keep detaching, your teats becoming sorer, your skin dryer?*

How does ***Margaret*** *decide whether something is edible or not? Why does she decide not to eat the long green shoots in the field, to eat pieces of apple rather than concentrate? What are her experiences of grabbing and chewing food - sensations of juiciness, softness, chalkiness?*

It's ***Bentley's*** *first time at an agricultural show, as Phil repeats the process of washing, cleaning, drying, foaming, combing, drying, shaving; Bentley, through the use of her tail, pinning her ears back, her bulging eyes, moving her body and legs as much as possible, depositing faeces everywhere, reaching out to touch another cow; moves beyond the routines of standing still and compliance that Phil anticipates.*

At a university research laboratory…I'm startled for amid the bricks and mortar a farm appears. There's a large shed with a corrugated roof and an open grass pen with ***eight Friesian cows*** *grazing, here to have drug tests conducted on them.*

At a government office in England….file ***AH372230012*** *- a cow considered too young to have given birth…and there are lots of other cases sat in the in-tray awaiting investigation…after 56 days these files no longer treated as active cases and placed in the 'old work' storage area on the system.*

With these ethnographic materials in mind, I want to close with three sets of remarks. Firstly, and theoretically, these moments (box 6.1 and part 6.3) begin to unfold the life of an individual animal, thus presenting a genuine and important shift away from thinking of cattle in terms of human knowledge, power and control, or attempting to translate human abilities and capacities onto animals. My argument here is that cattle cannot be stitched together and kindred an 'animal', or for that matter 'cattle', within relational ontologies. Here the collective, the network, the imbroglios, are breaking down as one misses aggregate scales and recognizes individual *cattle as embodied fleshy beings.* This engagement sketches out how cattle have an awareness of what is going on in the environments that they inhabit, (an emotional) understanding of what is or may be happening to them, and abilities to make decisions about each other, objects, and humans - and to keep us humans unacquainted with such views. Recognizing this individual fleshiness is integral to questioning the impact of (human) interventions and techniques on the life habits, patterns, rhythm and behaviour of cattle: what is it like to have your calf taken away (Rosie), to be sick (Becca, Yazzey) to be sent to market (Bella, Jocelyn) or find yourself at the slaughterhouse (Jasmine)?

Secondly, and empirically, these narratives edge towards different points of departure and 'arrival' than those that pervade conventional academic work. Spatially, this is not to deny that cattle fit within certain spaces and play-out certain roles so as to meet 'human' expectations of them (after Yarwood and Evans 1998:137) - living on Folly Farm and yielding milk. Fortunately, however, I believe that these engagements can be taken further. For example, cattle at Folly Farm have different modes of dwelling in deciding how they live out their lives in the fields, shed, parlour and yard afforded to them by Martin. And in this way, the farm, agricultural show, laboratory, market and slaughterhouse, can become spaces of pleasure and happiness, fear and uncertainty, anxiety and stress, sadness and relief. Thus, cattle have animalian ways of dwelling in the world and understanding their place in that world (Amy/Barbara). The task for humans is to query the physiological and psychological effects (stress, disorientation, herd bonding) of these environments on animals.

Thirdly, and finally, then, where might these corporeal and spatial trajectories lead? I am hopeful to a position that is mindful of the creatureliness of cattle (considerate, then, of their '*cattleness*'). Opting to follow this unknown path is academically hazardous, for this is about engaging the life of the individual animal other where one is not seeking to transpose that otherness on to the human self but let that otherness imploringly be (Cloke 2004). Let us be clear, this is not a call for 'animal rights'. Importantly, I want to set my work apart from that of theorists such as Regan (1998) and Singer (1975) whom emphasize the need to avoid indulging in emotions and parading our sentiments in determining the beliefs and desires, perception, memory and sense of future in animal species ('subjects of a life') or in adding up the numbers for and against (utilitarianism); and indeed from the views of the animal rights and welfare organizations whom have participated in this research and equate cattle experiences with that of humans. Instead, my insistence, on taking an animal's individuality seriously, involves operating intuitive and other vocabularies suited to its animalian expression, even if this is read as an over-investment, for this might lead one to contemplate how this particular animal is living out its life and our (human) role in determining if this (animalian) life is as it should be. Above all, this requires us to experiment more - to think beyond the (re)constitution of farming, notions of naturalness, artificiality and of getting back to the 'wild cow' - and turn to the animals themselves. Fundamentally, Amy, Rosie, Jasmine, Yazzey, Margaret, Bentley, AH372230012, Becca, Bella and Jocelyn occupy the designations *bos* and *taurine* but their lives are so much richer and more mysterious than this taxonomy suggests.

7. Conclusions. Margaret: practicing research, the imperative of relationality and (re)discovering animal geographies

Figure 7.1: Margaret

(Photograph taken Wednesday 29 May 2002)

7.0 Introduction

In her book hybrid geographies, Sarah Whatmore (2002) demonstrates some of the challenge and promise in thinking about a 'human' geography that 'exceeds' the human, arguing "that whether one works through the long practiced intimacies between human or plant communities or the skills configured between bodies and tools, one never arrives at a time/place when the human was not a work in progress" (Whatmore 2004:1361). Grasping something of what Sarah Whatmore is striving towards, this thesis opens with a diagram of 'the hybrid body spaces of a cow' (figure i.i); this cartoon-like caricature illuminating how seemingly hard and fast categories of human, animal and machine are becoming increasingly blurred (Whatmore 1999b).

From the outset, and amid a concern to develop animal geographies of cattle, this diagram (and 'blurring') serve both to exemplify how geographical engagements might be brought to bear on human-animal relations and detract from my own research which has sought to (re)work, and crucially to move beyond, these geographical investments through its commitment to individual animals - a reminder of how 'there are 'other' animal stories (waiting) to be told' (part i.i). Indeed, there are numerous illustrations through the thesis (photographs, 'moments', fieldwork notes and diary entries) of how (individual) cattle 'in the flesh' lead all sorts of lives and do all kinds of things that are worlds-apart from this somewhat mechanical (and lifeless) cow (figure i.i). And nowhere is

this more apparent than through Margaret (figure 7.1) whose fleshiness has inspired the kinds of *animal* geographies (part i.ii) that I have sought to excavate (part 3.2) and whom continues to shape, sustain and challenge my (*our*) research (*together*) on many different levels.

In these closing remarks, I want to provide a brief review of the preceding chapters, before moving on to cumulatively suggest what the thesis might contribute to methodological, theoretical and 'real world' discussions on human-animal relations. Above all, I want to continue to ponder how these animalian engagements with Margaret and other cattle might be taken further.

7.1 A review of the thesis

In this section I wish to re-examine the trajectory of the thesis, illuminating the journeys through which I have thought it important to recast pre-existent work in animal geographies and natural and social scientific literatures on human-animal relations, and to respond to the set of research questions set out in the preface (part i.ii).

Chapter 1 serves as an introductory frame for the thesis, conceptualizing some of the scientific, cultural and aesthetic lenses through which cattle have become known and understood by human societies at different scales, functions and institutional contexts. It examines, therefore, some of the ways in which cattle are constructed by vets, economists, advertising executives, policy-makers; illustrating how the images and representations produced enter into circulation through professional training books, television commercials, legislation and so on, in ways that have material and ethical consequences for the animals themselves. *Chapter 2* moves on to describe the theoretical place of animals in the social sciences, critically mapping bodies of work that seek to re-draw human-animal boundaries, namely: ecology, actor-network theory, hybridity, kinship, dwelling and non-representational theory.

Taken together, I set out at the beginning of the thesis to chart evident gaps in these (pre)existent understandings and literatures on human-animal relations, gaps that I argue lead many aspects of cattle lives uncharted as they become recognized only insofar as they affect human lives (chapter 1) and are dissolved - ecosystem, hybrid, kinship - and pushed through an analytical vocabulary - organism, actant, hybrid (chapter 2). The consequences of this are two-fold. Firstly, there remains a dependency on humanist points of departure, for it is humans who, however unintentionally so, are seen to be constructing the agencies of cattle; thus the point of view of cattle matters insofar as we, as humans, have determined what that point of view is, what their needs are and how these might be fulfilled. This leads me to query what kinds of relations are emerging here and to whose benefit. Secondly, and following on, this often entails a separation of our (human) lives from cattle such that

a series of dichotomies are enacted and reaffirmed: human/animal, wild/domesticated; and situated amid debates concerning the role of anthropomorphism in academic work and an (over)emphasis on building remnants of a pristine past ('wild' *bos taurine*). Above all, then, these chapters foreground the innovative purpose of the thesis: to think on from this material through a substantive focus on individual animals. How, therefore, might cattle, as living fleshy beings, be disclosed through the thesis?

Chapter 3 sought to describe how this impasse might be addressed methodologically. Recalling prior research engagements with Mr and Mrs Big (figure i.ii), I set out my commitment to continue to pursue a methodological approach that is animal-led. In so doing, I acknowledged the pivotal role that Margaret and other cattle have made in selecting the places and things that I have researched, thus highlighting how I implicated myself in Margaret's life and living spaces. On the one hand, academically, the task here is to demonstrate how the (animal) other is not translated on to the (human) self, a trajectory that pervades existing work in animal geographies. On the other hand, and touching upon the everyday, the chapter demonstrates how research can be seen as an ongoing and shared process among all those participating in the project, regardless of whether they are human or animal, and in whatever capacity.

Chapter 4 glimpses the corporeal lives of Rosie, Jasmine, Ideal, Yazzey and Margaret, in asking *what meanings of corporeality are woven into the lives of cattle and how do these understandings impact upon, and yet are disturbed by, the embodied agency of individual animals.* Focusing on three body-practices: breeding, milking, feeding, the chapter investigates how cattle bodies become materially, aesthetically and virtually defined. This (human) intervention is appropriated through a desire to mate an 'ideal cow' with an 'ideal bull' (investigating the biological properties of sperm and ova; running statistical packages that model the genetic value of any offspring); a desire to monitor cattle 'from grass to glass' (increasing milk yields through the excretion of oxytocin, the robotic modification of the parlour, and measuring the composition and bacteriological quality of milk); and formulating dietary packages (that adhere to a set of nutritional guidelines, measure 'voluntary feed intake' and map rumen microbes). Together, each of these body-practices is set out against a lactation curve (figure 4.8) in ways that support an understanding and (re)composition of universalistic representations of the (generic) cattle body, what I term 'body as flesh'. Importantly, the chapter continually illustrates how this intervention and appropriation is a (human) task that is never fully accomplished, for here one is also left with a sense of how individual cattle disturb and rub against reproductive, milking and digestive knowledges: Rosie's calf 'Jasmine' is not genetic progress and destined for market, Ideal's proof is under constant review, Yazzey's spell of Mastitis and twice-daily walk to the parlour cause her yields to fluctuate and Margaret's decisions over whether something is edible or not fall outside her feed plan. And this is critical for thinking seriously about cattle as fleshy bodies and the ethical

consequences therein; all of which seem to me to be overlooked in pre-existent work on human-animal relations. Ultimately, what types of animal husbandry are we prepared to accept and tolerate and what are the impacts of these decisions on cattle?

Chapter 5 explores how the everyday spatialities of cattle constitute a mode of dwelling, as against building, in the world. Oscillating between individual bodies in place and their habitation of more virtual spatialities the chapter queries *how can cattle, in their everyday lives of different sorts, be seen to co-constitute and re-constitute places and spaces?* In response, this means thinking about how individual cattle shape habitats, places and landscapes - a move towards comprehending how their animalian bodily substances and markings (urine, faeces, hoof prints) and bodily postures (standing, lying, interacting with each other and organizing territory) impress Folly Farm, an agricultural show and reverberate 'elsewhere' - as a virtualized barcode, disappearing and reappearing as varying degrees of living and dying are actualized. And yet amid these illustrative examples I remain mindful of how ideas of co/re-constitution are fraught with difficulties, signalling in particular how humans continue to design, influence and modify the spatialities of cattle, oftentimes constraining and hindering their animalian (embodied) natures - the fences, chains, ropes, sticks, medication. Are the conditions of existence in these environments appropriate for individual cattle?

Chapter 6 consolidates the material presented in chapters 4 and 5 to probe *what forms of ethical responsibility towards cattle are imposed and unsettled through these corporeal understandings and spatial relations.* Emergent from all of this is, in the first instance, an acknowledgement of how cattle find themselves configured as a resource whose bodily functions and life experiences might be altered and manipulated with a resultant price tag attached. In the second instance, this amounts to a demand from animal welfare organizations and rights protestors to rethink (factory and intensive) farming practices or call for an end to using animals for food; these messages imparted to members of the general public through placing cattle into a series of rehearsed ideological frames (veal crate, long distance transport, shopping trolley). The ethical approaches here resonate with earlier chapters (1, 2 and 3), through an interplay between a desire to (re)locate cattle in pristine environments ('get back to the wild bos' narrative) and through continuing debates about the role of anthropomorphism and how to determine animal capabilities (alongside human capabilities). A crucial point: these ethical strands, left critically unattended, only allow for an understanding of how cattle should be treated with respect and compassion (premised according to human welfare), and not for a contemplation of how a particular animal is living out its life and our (human) role in determining if this life is as it should be. Thus, to take ethical considerations forward, I argue, requires us to be (emotionally) reflexive and responsive in our encounters with individual animals (i.e., Becca's illness or Bella and Jocelyn leaving the farm); to contemplate whether animals are able to express their cattleness and, above all, to foster an ethic rooted of and for the (animalian) other (after Cloke 1999).

Through all of this, then, the thesis seeks to offer a compelling set of insights into the lives of cattle in ways that 'speak back' to literatures on animal geographies and natural and social scientific work on human-animal relations. Having reiterated the chapters of the thesis, in the next section I want to set out the 'key contributions' that this work makes to (contemporary) scientific thought.

7.2 Animal geographies / animalian signatures

From this journey through the thesis chapters, and articulation of the importance of individual animals, I want to elaborate upon three manoeuvres which have very different lineages from those associated with much existing work on human-animal relations. They are: methodological practices, theoretical ventures and ethical sensibilities.

Practicing - lifecycles and Margaret

> Most of my activities while 'in the field' were designed to gain objective, replicable information about the animals' lives…doing good science, as it turned out, consisted mostly of spending every possible moment with the animals, watching them with utmost concentration, and documenting myriad aspects of their behaviour (Smuts 2003:75).

In her 'methods of study', Barbara Smuts demonstrates an anxiety buried in accounts of 'good science'. From the off, as Smuts immersed herself into the lives of baboons, chimpanzees and dolphins, her fieldwork became fractured by the contingencies and strains of understanding and 'scientifically' documenting animal behaviour. And this challenge resonates in my own research practices – questioning at the outset how to research empathetically with living, fleshy animals, and recurring here and now in various guises as I continue to ponder these activities 'in the field' and ask if there is something more (or else) that I could have done to allow the ethnographic presence of cattle to be woven through the thesis.

For I have sought to bring individual cattle into unlikely communion with standard social scientific methodologies so as to unsettle the fault lines between field and thesis, practice and theory. Coming at these issues from what I continue to call an 'animalian perspective', this research originated in a chance encounter, meeting Margaret, and spending three days with her at an agricultural show. Consequently, this led me to realize that doing 'good science' meant saying something meaningful about the lives of individual animals in their immediate spaces of dwelling. It is for this reason that I altered my activities 'in the field', no longer developing 'lifecycles of dairy cows' (appendix II) but rather immersing myself into the lives of Margaret and the other cattle at Folly Farm (and in other places and spaces).

> To witness something implies a responsiveness…It is radically different from what one might call the "consuming gaze" that says "here, you entertain me, I bought a ticket, and I'm going to sit back and watch". This consuming gaze doesn't want to get involved, doesn't want to give anything back. In contrast, what I call witnessing is much more interactive, a kind of perceiving (with one's whole body) that is committed to a process of mutual dialogue (Albright 1997:xxii).

Albright's (1997) writing on witnessing breaks down those common associations scripting how research should be and how one practices research, broadening and deepening understandings between self and other which otherwise would perhaps not be made (see also Cloke et al, 2000). Indeed, the empirical richness of cattle lives that I have sought to impart speak to how animals have contextualized the 'findings' that have emerged and characterized the research more generally thus calling one to witness that which is otherwise irrevocably overlooked and lost, namely that (human) self and (cattle) other become part of a dialogic research process. And it is this empirical reflection of self and other that illuminates how the thesis might serve as an illustrative example of how to 'practice animal geographies'. I offer three points.

Firstly, a plethora of what it means, and what it might mean, to do research *with* and *for* animals opens up; for this is an empiricism that involves moving away from the self towards the other and, as a consequence, relies on methods that are phenomenological, performative and non-representational in going some way towards exploring the lived emotions, feelings, thoughts, experiences and intentions of Margaret (and other cattle). The call here is to expand the remit of what is seen to constitute a research *subject* and a research *practice*, a call, therefore, for a set(s) of (perceptual, visual, audio and textual) practices that are animal orientated rather than prescripted and humanist (talk, text); even if they are accompanied by epistemological reasons that make them difficult to admit (i.e., anthropomorphism, debates on animal capabilities). This is not:

> a question of speaking for others – as if somehow we have access to, or recourse to, their experiences – but rather we can risk ourselves for others by implicating ourselves in their lives and spaces (Cloke 2004:96-97).

This is precisely a question of selfness, to look beyond the significance of (my) self to amplify the other (cattle) voices of the researched. And this requires one to situate the large scale, general and contextual understandings of methods that social and natural scientists bring, alongside the personal, everyday and momentary experiences of cattle that they deny.

Secondly, giving yourself over to the other and implicating oneself into cattle spaces presents a way of thinking animal geography where the need to revise fieldwork and abandon methods that are deemed detrimental by the animals themselves is recognized. This salience to research ethics enjoins my numerous 'methods of data collection' that cattle seemed amused by, did not like, or respond

well to: the use of equipment (rucksacks, cameras, tape recorders) culminating in the blurred photographs littering the thesis and absence of audio-visual material; and instances when I arrived at the farm and was not able to enter the field or shed, my path blocked by members of the herd. I remain mindful that in each of these instances the 'tables are turned', as cattle tear the threads and re-draw the edges of the research agenda. More than this though, I want to signal a note of caution. For amid the seduction of experimental styles of working and aspiration to 'cover the space of the other' there is a danger, I think, of being ill-equipped to resist, or recognize, pilfering Margaret. For this move has an ethics and politics of practice to it: how to overcome an (inbuilt) desire to empower the self over the other (see Cloke 1999); have we forgotten or dismissed the ability to think for ourselves (Widdowfield 2000)? Indeed, one of the utmost challenges as I see it is to advance an onus and responsibility in not merely subjugating your research agenda and contemplating, therefore, the impact of differing fieldwork practices on Margaret, but also a reflection on the aspects of her life that are presented (and omitted) in written accounts.

Thirdly, and following on, what does it mean to do research in this way, starting from Margaret? I think the substantive empirical contribution that this thesis makes is one of reaching an 'empathetic depth' with animals, thereby accentuating the need to spend a long period of (fieldwork) time with cattle. There is a dead tissue of thought in social and natural sciences rendering how fieldwork should not end until the researcher has reached 'saturation' – a state where everything one sees and hears has been encountered before (Arluke and Sanders 1996). In this vein, and amid the constraints of a four year PhD programme, I am wondering if I am harbouring a 'squirrel-acorn' sense of collecting and hoarding 'data' (Crang 2003b; Whatmore 2003c), for I do not consider myself to have reached such a point. Therefore, I am left querying if there are moments in the research where I might have been able to set out to achieve what I wanted to achieve by seeking more engagement with individual animals? In particular, I am left questioning if there is a need to spend more time with Martin, to immerse myself more fully in to the lives of cattle at Folly Farm over longer periods of time, and with particular animals or (herd) groupings of animals. For if this kind of research project is to make a difference to the working practices of geographers and social scientists perhaps I am compelled to follow Smuts (2003:75), for whom 'spending every possible moment with the animals' involves:

> to encounter...not once or a few times, but over and over...years spent in the company of....gorillas...chimpanzees...dolphins...In each case, I was lucky to be accepted by the animals as mildly interesting, harmless companion, permitted to travel amongst them, eligible to be touched by hands and fins.

Setting expectation aside, this is decidedly not to denigrate into a fixation with a longitudinal style of research - a 'how long should I endeavour to spend with Margaret: eighteen months, three years, six years...until I reach some form of saturation?' With this question in mind, the crucial point that I

wish to impart is this: one of the deepest challenges in practicing animal geographies is that cattle themselves will disappear. I'm most keenly interested in insisting, then, that animals offer humans real choices. But this is dependent upon the researcher changing his or her perspective, his or her relationship to animals; and surprisingly few researchers take advantage of the opportunity to get a different view. Put another way, a researcher could go to Folly Farm and not bring themselves into contact with the (animal) other, nor implicate themselves in cattle lives as I have done. Such dedication touches upon the ways in which Margaret has taken me on a journey, transporting me to places and spaces that I didn't know exist, and fundamentally changing the way in which I think about methodological ideas and practices. What gives this thesis its methodological crunch, then, is the fact that providing accounts of animal lives involves not 'just' spending (some) time being-with animals but also to be open to seeing and enabling the research itself to be shaped by animals.

Theorizing - relational ontologies and Margaret

> ...a radically different understanding of 'who' (what) constitutes the worlds 'we' inhabit (Whatmore 2000b:266).

The theoretical adoption of ideas and methods from variants of actor-network theory, feminist studies, non-representational theory and performance among others (chapter 2) have led geographers to startle habitual assumptions about what life is (for examples see Bingham and Thrift 2000; Braun 2004b; Davies 2003; Elder et al, 1998; Hinchliffe 2000b; Murdoch 1997a 1997b; Whatmore 2002). This enlivening of categorical distinctions between the human and nonhuman is at odds with purification (Latour 1993), originality (Whatmore 2003a), and assigning linguistic competencies (to humans) (Whatmore 1999a). The common thread here is concerned, on the one hand, with making sense of some of the ways in which animals are shaped by human cultures and technologies; on the other hand, highlighting the obscured capacities that animals bring to any human centred notion of what is taking place (part 2.2).

For me, this theoretical lineage, and concern with 'worldliness' therein, remains troubling. Throughout the thesis I have queried whether there is too much emphasis on relationality (i.e., becoming, immanence, flows, associations, networks, hybrids and so on), and too little consideration on the points of departure, the paths that are pursued, the actants that are followed and what, therefore, is included or excluded (chapter 3). In essence, I have argued that animals are overlooked within relational aggregations even though their influence may be significant to the accounts being provided (part 2.3). And it is through engaging with individual animals in particular settings (see parts 2.3, 4.4 and 5.5) that I set this work apart from a 'generic' geographical or social scientific enterprise, coming at these issues through notions of disaggregation (part 4.4), co-constitution (part 5.5), blank figures (parts 2.3, 5.3 and 5.4) and culminating in an idea of *cattleness*.

I should like to make it clear that as I have worked through some of these theoretical resources and curiosities (part 2.2) I think there is considerable potential in the kind of project working under a 'relational geography' signature – with theorists noting how different actants bring different qualities to relational configurations. But in so doing such a project has become, I believe, imperilled by its name, that is, more adhesive and yet at its worst aggregating and ultimately denigrating animalian lives. Essentially, this way of thinking leaves no room for any being or thing to stand beyond the relations through which the world is being described:

> It is colonial in the sense that such a relational approach to difference allows no possibility for the kind of otherness that is 'outside' relations and which provides the conditions for relationality as a possibility prior to its ongoing ordering (Hetherington and Lee 2000:173).

Consequently, how do you 'capture' personal as well as collective involvement in the world; how do individual cattle subsist and exceed relationalism? How might one get close to this state, to sensing animalian individuality? Taking these engagements further produces two movements: one away from an analytic frame of hybrids, networks, collectives, towards individual, fleshy beings; the other towards thick descriptions charting how individual animals form relations.

In the first instance, this is to pay attention to scale. Does this research imply that the 'aggregate' must somehow reflect the 'individuals' in it? Is this a matter, for example, of a levelling-out process or adding another layer to the relational (e.g. cattle-herd-Margaret)? To respond, this way of thinking causes problems. Not least that such an endeavour might not escape the humanist, representational and power-ridden set up of which it is a part. In other words, I am anxious that deconstructing relationality to theorize about individual animals may become a task of simply acknowledging Margaret, thus opening up the category of animality rather than being concerned with Margaret per se. Where, for example, is the empirical and ethical impetus and rigour that might reflect and sustain an insistence on Margaret and her 'worldliness'? To be clear, I think there is a logical impossibility in any attempt to express the experiences of individuals through relational approaches (i.e., relational theorizations were not designed nor developed with individuals in mind). This is not to deny how some theorists have sought to redress the discordance of individuals (for examples see Leigh-Star 1991; Whatmore and Thorne 2000), rather a crucial issue of scale remains: Margaret is first and foremost part of an aggregate and never the starting point or sole focus of attention. Rather than dismantling relationalism – by breaking down the actants in the network – the task that lies before us is to present moments from Margaret's life that appreciate and embrace her animalian qualities (see parts 3.2 and 4.3).

With this in mind, I positioned dwelling as an approach that moves beyond being 'all too human' to being open to 'animal' worlds. This phenomenological space of immediate experience ground out of

the body, where individual organism and environment are folded into the fabric of the world, I thought, would provide a useful theorization of how Margaret and other cattle might be seen as co-constituents of places and spaces. And yet I want to remark that, left critically unattended, dwelling stumbles or fails to get to grips with a host of animalian compositions. The imperceptibles elided by dwelling include a sense of animalian intuitions, emotions, desires; and how any co-constitution by cattle is marked through fear, pleasure, pain; all of which are beyond our familiar human denoted world. There are pertinent questions here about whether dwelling provides a fruitful or fruitless way of apprehending the individual fleshy animality of cattle in the world: where and how does Margaret come into existence? At what point, and how, might dwelling be taken forward to make (some) sense of Margaret's animalian practices?

If it is not enough, and wholly problematic, to trace how the relational is inscribed by individual animals; or how humans and animals form an unfolding timespace of particular landscapes and places, an under tapped resource emerging through the thesis has been to invest in thick descriptions (Radley 1999) that apprehend Margaret as a living fleshy being with a life of her own. In the second instance, therefore, this worry about individuals and scale resonates with psychoanalytic work. This diverse corpus of literature has been providing geographers with a theoretical orientation upon which to examine how practices, identities, discourses and landscapes oscillate from individual psyches and behaviour to (re)produce social and spatial divisions (Philo and Parr 2003; Sibley 2000; Wilton 1998). Although the focus on the integrity of the human self is arguably different from my concern with fleshy animality, such an approach opens out critical thinking about how to take an individual animal and their agency seriously. The implications of this, in seeking to maintain a sense of Margaret's alterity through thick description, are two-fold. Firstly, what I am calling for is a sensitivity to situatedness (after Jones 2003), a terrain upon which encountering Margaret face-to-face, her bodily presence, her (emotional) concrete experiences of specific situations are seen to be important. In the second instance, this resonates beyond the grounded in opening up new possibilities for animalian creativity that lye beyond Margaret's dwelt place in the world, becoming attentive to her flexible and uncertain (spatial) figuring (see parts 5.3 and 5.4). Collectively, this may lead one to become more attentive both to the type of life that Margaret leads and how she is excluded from some (animalian) aspects of living; thus fostering an ethical imperative that would move towards (re)inclusion and improving her well-being.

Ethical thoughtfulness - Martin and Margaret

> Many animals and other non-human others are in the unfortunate position of being ethically invisible as individuals, while being only too visible as bodies comprising economic resources of some kind or another (Jones 2000:285).

In taking valuable insight from a Levinasian approach to ethics, Jones (2000) signals a critical need to begin charting the economic, political and cultural contexts that lead animals to be abstracted into populations (*bos taurine*), in no way thought of as being ethically considerable as individual fleshy beings (Margaret). Moreover, as Ryder (2000) identifies, contemporary human relations to farm animals are characterized by a 'moral blindness', that is, a distancing or 'looking away' from the place of production as agricultural practices become formulated and reaffirmed through the policies of multinational corporations and international structures. From this perspective, Jones (2000) and Ryder (2000) open up a discordance in animal husbandry, relocating understandings of the relationship between individual beings and collectives: why should individual animals count morally? To whom do we entrust the well-being of animals? How can the situation of animals be improved? To respond, this thesis has sought to plug into a more creative space, emphasizing a concern for individual animality, and unsettling the humanely derived criterion through which cattle are deemed worthy of inclusion or exclusion from the moral community.

Tackling this disregard for individuals is important for there is, I believe, a profound link here between the way in which Margaret as an individual is treated and how cattle as a generic population might be treated. And yet it is precisely in seeking to find a way through the cracks to the 'cattle population' that conventional approaches to ethics let us down. On the one hand, natural scientists persist in describing the impossibilities of knowing what really goes on in the mind of animals, arguing that while this is true of other humans, all humans are wired in the same way so we have reason to assume that other peoples experiences (of pain, suffering) will be similar to our own. In continuing to keep hold of those aspects that make us human, scientists are investigating whether cattle feel pain, have a sense of consciousness and emotional lives, debates that culminate in a taxonomic distribution wherein it is thought that all vertebrates feel pain, whereas most invertebrates probably do not. On the other hand, social scientists are seeking to move beyond the (human) subject in charting how humans and nonhumans are associated with the emergence of particular sets of relations (affectivity and immanent potentiality), relations which are always, implicitly, ethical. And yet, for me, these approaches remain problematic insofar as they do not lead one to contemplate how Margaret may be ethically considerable. Rather, these lines of enquiry remain concerned with 'who are we in the present?' in ways that wrap and envelop Margaret into a singular source (for humans) with an accompanying knowledge production that construct and represent some agricultural practices as more ethically acceptable (organic, free-range) than others (factory, intensive). Here the question of animals and ethics is approached in purely economic, pragmatic and relational terms, with Margaret's life compared to that of her 'wild' ancestors, her biological and genetic make-up used to make decisions about the environment in which she is living; a style of living that is often worlds-apart from her actual life on Folly Farm. This project may be pressing, indeed Margaret and other cattle at Folly Farm are reared for milk and beef and inserted

into different relational contexts which can, and do, shape their lives. However, I am critical because such a project leads to an unacknowledged and lingering anthropocentrism (exclusions, censoring, and signification). What, therefore, might it mean to think about Margaret as an individual fleshy being where she is not framed solely as a member of a given population, or subsumed into debates regarding how humans and animals are categorically distinct? Moreover, what are the broader links here between my concern to remap methodological practices and understandings of relationality through tracing geographies of Margaret? To conclude, I think they signal the need for a careful (re)reading of the ethics of human-animal relations, one that recognizes *animalian capacities* and opens up 'new' *sites* of ethical considerability – capacities and sites which have been there all along but, for a variety of reasons have barely registered in academic work as 'spaces' worthy of attention.

Firstly, and regarding 'sites', the thesis illuminates a closed set of production arenas: laboratory, lorry ramp, holding pen, shed, field. On the one hand, these sites point towards a need to take account of those who work with animals on a daily basis and have done so for many years. For Martin (the dairy farmer at Folly Farm) has a closeness and way of being with individual members of the herd that he has developed habitually over time: Margaret eats fruits, vegetables and concentrate feed from a particular bucket, Martin strokes Penelope first upon entering the field or shed, and he makes Melissa's bedding up in to a flattened shape. Although I find it impossible to translate many of the ways in which Martin comes to know the animals - how did Margaret come to eat from a particular bucket?, I do not want to neglect the power and inequality (and inherent contradictions) in relations between Martin and Margaret, Martin and other members of the herd. I am thinking here of how access to veterinary treatment and care is premised according to how much milk an animal yields (i.e., a high yielding animal receives prompt treatment; the use of crushes); and what happens to animals when Martin determines that they are 'spent' - thus destined for the slaughterhouse. On the other hand, there are also pertinent questions here about the role of humans in practices of laboratory animal husbandry (drug development – 'suffering laboratory subject') and slaughter (holding pen): what are the conditions of existence? What practices towards an individual animal are deemed ethically acceptable and unacceptable?

Secondly, as cattle are caught up in these different locations, an appreciation (and celebration) of their animalian 'capacities' (distinct characteristics, skills and qualities) through which Margaret defines who she is becomes apparent. The thesis, therefore, forms part of a compelling call for a different orientation point, one that engages with individual animals apart from the frame of the human self. In other words, think about it like this: we need to deal with what is happening and being created in front of us through Margaret (and other cattle). And this leads me to query if individual cattle have animalian ways of acting 'morally'. I am thinking here of how the thesis describes instances where cattle demonstrate 'genuine' concern for each others plight: Rosie and

Jasmine 'bonding' and 'separating', Bella and Jocelyn entering the lorry or Ruby aiding Becca's passage to the feed trough during her illness.

In practice, where does this recognition of sites and animalian capacities take (or leave) understandings of ethics? I think that they move beyond determining and attempting to meet the physical and mental needs of cattle (the 'formalized' and 'relevant' in terms of animal welfare policy), to everyday, more intimate, micro-geographies of care through which Margaret and other cattle are looked after. I am thinking here of Martin's routine and daily tasks such as feeding and cleaning, or the interactions between the animal services team and cattle in the laboratory; this is to think about how things happen at these sites and if they might happen differently. But this move raises troubling matters. For example, is it possible to transpose my concern for individual cattle with broader issues relating to cattle as a population? And what is the relationship here between the impulse that I have to somehow write about animals (to re-present moments from Margaret's life) and an impulse to intervene purposefully in her animalian life. Significantly, I have come to wonder if these matters are not impossible tasks - here and now I am still working through what this research might mean for Margaret - my sitting with her for long periods of time in the shed and continuing to share apples with her. Above all, and amid this lack of meaningful clarity, I think that we (as academics) need to keep working at the challenges that Margaret sets before us.

7.3 (Re)discovering animal geographies through Margaret and other cattle

> Can we make room for the animals?
> Let them in and they might run amok, ruin the demonstration. Take them to a tribunal and they'll make a monstrous show, an unruly display. Bloody nuisance. Squeeze them in next to the stones and plants. There. Gone. That's better (Glendinning 2000:19).

In reflecting upon what it might mean theoretically, methodologically and ethically to take individual animals seriously, the (academic) task, I want to conclude, should not be seen as an attempt to fit Margaret in to the contours of our (human) concepts and categories. For this research is in many ways borne out of a frustration with a decidedly 'human' geography that in attempting to refuse the purified spaces of humans and animals fails to take account of animal relations of all kinds. At the beginning of the thesis, then, I placed at the forefront my intention to engage with the individuality and fleshy animality of cattle. From this, I want to stress that as the thesis has progressed this has become circumscribed by an emotional engagement too. For me this is particularly key for thinking about how we might grow in our abilities to apprehend the co-constitution of places, spaces and practices by individual animals. Uncertain of the possibilities of such an approach at the start, here and now this remains a difficult path to follow. For example, I am left questioning if Margaret's appearances (and disappearances) through the preceding chapters move some way towards

addressing this neglect. Has a sense of Margaret as an animal with her own needs and self-awareness emerged (after Philo 1995)? Have I engaged with Margaret as a real animal rather than how I might have imagined her to be (after Serpell 1996)? Moreover, have I considered the lives of cattle 'more' closely than pre-existent work in animal geographies (after Wolch and Emel 1998)? And what enduring sort of 'contribution' is this thesis intended to make? For animal geographies this work implies a recognition of animals whereby 'we' 'academics' might implicate ourselves in animal lives, take responsibility in our relations with them and above all not seek to extinguish and absorb their animalness within (human) accounts. And this move aims to change the role of the academic by recognizing how my (ongoing) encounters with Margaret do not, nor should they be expected to, offer (any) matter to be confronted. Importantly, this thesis forms part of a call for the development of *animal* geographies that are truly animalian in their very nature; accepting of Margaret for who she is, not 'squeezing her in' nor being anxious of her 'running amok'.

References

Abram D., 1996. *The spell of the sensuous.* New York: Vintage Press.

Adams C.J., 1990. *The sexual politics of meat. A feminist-vegetarian critique.* Cambridge: Polity Press.

Agnew R.E and Yan T., 2000. Impact of recent research on energy feeding systems for dairy cattle. *Livestock Production Science*, 66:197-215.

Agricultural and Food Research Council (AFRC)., 1990. Technical committee: nutritive requirements of ruminant animals: energy. *Nutrition Abstracts and Reviews B*, 60:729-804.

Agricultural and Food Research Council (AFRC)., 1993. *Energy and protein requirements of ruminants.* Wallingford: CAB International.

Agricultural Industries Confederation (AIC)., 2005. Animal feed issues.
http://www.agindustries.org.uk/issues/animalfeed/bse.asp
Last accessed 12 January 2005.

Alban L., 1995. Lameness in Danish dairy cows: frequency and possible risk factors. *Preventative Veterinary Medicine*, 22:213-225.

Albright A.C., 1997. *Choreographing difference. Body and identity in contemporary dance.* Middletown: Wesleyan University Press.

Alger J.M and Alger S.F., 1999. Cat culture and human culture: an ethnographic study of a cat shelter. *Society and Animals*, 7:unpaginated.

Allen M.S., 1996. Physical constraints on voluntary intake of forages by ruminants. *Journal of Animal Science*, 74:3063-3075.

Anderson B., 2002. A principle of hope: recorded music, listening practices and the immanence of utopia. *Geografiska Annaler B*, 84:211-227.

Anderson K., 1995. Culture and nature at the Adelaide Zoo: at the frontiers of 'human geography'. *Transactions of the Institute of British Geographers*, 20:275-294.

Anderson K., 1997. A walk on the wild side: a critical geography of domestication. *Progress in Human Geography,* 21:463-485.

Anderson K., 1998. Animal domestication in geographic perspective. *Society and Animals*, 6:119-135.

Anderson K., 2003. White natures: Sydney's Royal Agricultural Show in post-humanist perspective. *Transactions of the Institute of British Geographers*, 28:422-441.

Anderson K and Smith S.J., 2001. Editorial: emotional geographies. *Transactions of the Institute of British Geographers*, 26:7-10.

Animal Agriculture Alliance., 2003. Animal agriculture: myths and facts. In: Armstrong S.J and Botzler R.G (eds.), *The animal ethics reader.* London: Routledge, pp.191-198.

Animal Feed Research Council (AFRC)., 1993. *Energy and protein requirements of ruminants.* Wallingford: CAB International.

Anker P., 2004. Commentary: a vindication of the rights of brutes. *Philosophy and Geography*, 7:259-264.

Ansell Pearson K., 1999. *Germinal life. The difference and repetition of Deleuze.* London: Routledge.

Appadurai A., 1986. Introduction: commodities and the politics of value. In: Appadurai A (ed.), *The social life of things. Commodities in cultural perspective.* Cambridge: Cambridge University Press, pp.3-63.

Appleby M.C., 1998. Commentary: genetic engineering, welfare and accountability. *Journal of Applied Animal Welfare Science*, 1:255-273.

Arluke A., 1994. Sacrificial symbolism in animal experimentation: object or pet? *Anthrozoös*, 2:97-116.

Arluke A and Sanders C.R., 1996. *Regarding animals.* Philadelphia: Temple University Press.

Atkins P.J., 1977. London's intra-urban milk supply, circa 1790-1914. *Transactions of the Institute of British Geographers*, 2:383-399.

Badmington N., 2003. Theorizing posthumanism. *Cultural Critique*, 53:10-27.

Baker S., 1993. *Picturing the beast. Animals, identity and cultural representation.* Manchester: Manchester University Press.

Baker S., 2000. *The postmodern animal.* London: Reaktion Books Limited.

Baker S., 2001. Guest editor's introduction: animals, representation and reality. *Society and Animals*, 9:189-201.

Baker S., 2003. Sloughing the human. In: Wolfe C (ed.), *Zoontologies. The question of the animal.* London: University of Minnesota Press, pp.147-164.

Baldwin R.L, Koong L.J and Ulyatt M.J., 1997. A dynamic model of ruminant digestion for evaluation of factors affecting nutritive value. *Agricultural Systems*, 2:255-266.

Barad K., 1998. Getting real: technoscientific practices and the materialization of reality. *Differences*, 10:87-128.

Barnard C.J and Hurst J.L., 1996. Welfare by design: the natural selection of welfare criteria. *Animal Welfare*, 5:405-433.

Barnes C., 1995. *Animal science in action.* London: Hodder and Stoughton Educational.

Bart J., 1995. Acceptance criteria for using individual based models to make management decisions. *Ecological Applications*, 5:411-420.

Bateson P., 2004. Guest editorial: do animals suffer like us? - the assessment of animal welfare. *The Veterinary Journal*, 168:110-111.

Baxter J and Eyles J., 1997. Evaluating research in social geography: establishing "rigour" in interview analysis. *Transactions of the Institute of British Geographers*, 22:505-525.

Beardsworth A and Bryman A., 2001. The wild animal in late modernity. The case of the disneyization of zoos. *Tourist Studies*, 1:83-104.

Beardsworth A and Keil T., 1997. *Sociology on the menu.* London: Routledge.

Begon M, Harper J.L and Townsend C.R., 1996. *Ecology. Individuals, populations and communities.* Oxford: Blackwell Science.

Bell D and Valentine G., 1997. *Consuming geographies: we are what we eat.* London: Routledge.

Benbow S.M.P., 2004. Death and dying at the zoo. *The Journal of Popular Culture*, 37:379-398.

Bendixen P.H, Wilson B, Ekesbo I and Astrand D.B., 1988. Disease frequencies in cows in Sweden. *Preventive Veterinary Medicine*, 6:17-25.

Bennett J., 2001. *The enchantment of modern life. Attachments, crossings and ethics.* Woodstock: Princeton University Press.

Bennett K., 2004. Emotionally intelligent research. *Area*, 36:414-422.

Bennett K and Shurmer-Smith P., 2001. Writing conversation. In: Limb M and Dwyer C (eds.), *Qualitative methodologies for geographers. Issues and debates.* London: Arnold, pp.251-263.

Bennett R., 1995. The value of farm animal welfare. *Journal of Agricultural Economics*, 46:46-60.

Bermond B., 2003. The myth of animal suffering. In: Armstrong S.J and Botzler R.G (eds.), *The animal ethics reader.* London: Routledge, pp.79-85.

Bingham N., 1996. Object-ions: from technological determinism towards geographies of relations. *Environment and Planning D: Society and Space*, 14:635-657.

Bingham N., 2003. Writing reflexively. In: Pryke M, Rose G and Whatmore S (eds.), *Using social theory. Thinking through research.* London: Sage Publications, pp.145-162.

Bingham N and Thrift N., 2000. Some new instructions for travellers. The geography of Bruno Latour and Michel Serres. In: Crang M and Thrift N (eds.), *Thinking space.* London: Routledge, pp.281-301.

Birke L., 1994. *Feminism, animals and science. The naming of the shrew.* Buckingham: Open University Press.

Birke L., 2003. Who - or what - are the rats (and mice) in the laboratory. *Society and Animals*, 11:207-224.

Blakely J and Blade D.H., 1979. *The science of animal husbandry.* London: Prentice Hall.

Boettcher P.J., 2001. 2020 vision? The future of dairy cattle breeding from an academic perspective. *Journal of Dairy Science*, 84:62-68.

Boettcher P.J, Dekkers J.C.M, Warnick L.D and Wells S.J., 1998. Genetic analysis of clinical lameness in dairy cattle. *Journal of Dairy Science*, 81:1148-1156.

Bohrer B., 2005. Mobile slaughter units make niche markets.
http://www.thestate.com/mld/thestate/business/11715148.htm
Last accessed 2 June 2005.

Boissy A and Bouissou M.F., 1995. Assessment of individual differences in behavioural reactions of heifers exposed to various fear-eliciting situations. *Applied Animal Behaviour Science*, 46:17-31.

Bolland M, MacGibbon A and Hill J., 2001. Designer milks for the new millennium. *Livestock Production Science*, 72:99-109.

Boothby F., 2001. *Artificial breeding of cattle.* London: Halstead Press.

Botkin D.B., 1990. *Discordant harmonies: a new ecology for the twenty-first century.* Oxford: Oxford University Press

Botsoglous N.A and Fletouris D.J., 2001. *Drug residues in foods: pharmacology, food safety and analysis.* New York: Marcel Dekker.

Bovine Spongiform Encephalopathy (BSE) Inquiry., 2000. Animal Heath 1989-1996: cattle tracing www.bseinquiry.gov.uk/report/volume5/chapter55.htm
Last accessed 14 January 2005.

Boyd W and Watts M., 1997. Agro-industrial 'just-in-time': the chicken industry and post-war American capitalism. In: Goodman D and Watts M (eds.), *Globalising food: agrarian questions and global restructuring.* London: Routledge, pp.192-225.

Boyne R., 2001. The art of the body in the discourse of postmodernity. In: Featherstone M, Hepworth M and Turner B.S (eds.), *The body. Social process and cultural theory.* London: Sage Publications, pp.281-296.

Bradshaw I.G.A., 2004. Not by bread alone: symbolic loss, trauma, and recovery in elephant communities. *Society and Animals*, 12:143-158.

Braun B., 2004a. Modalities of posthumanism. *Environment and Planning A*, 36:1352-1355.

Braun B., 2004b. Editorial: querying posthumanisms. *Geoforum*, 35:269-273.

Braun B and Castree N., 1998. The construction of nature and the nature of construction. Analytical and political tools for building survivable futures. In: Braun B and Castree N (eds.), *Remaking reality. Nature at the millennium.* London: Routledge, pp.3-43.

Brillat-Savarin J.A., 1994. *The physiology of taste.* London: Penguin Books, Trans. M.F.K Fisher.

British Society of Animal Science (BSAS)., 2002. *Nutritional Standards Working Group: dairy cows.* Hillsborough: Agricultural Research Institute of Northern Ireland.

Britt J.H, Scott R.G, Armstrong J.D and Whitacre M.D., 1986. Determinants of estrous behaviour in lactating cows. *Journal of Dairy Science*, 69:2195-2202.

Broom D.M., 1988. The scientific assessment of animal welfare. *Applied Animal Behaviour Science*, 20:5-19.

Broom D.M., 1991. Animal welfare: concepts and measurement. *Journal of Animal Science*, 69:4167-4175.

Broom D.M., 1993. A usable definition of animal welfare. *Journal of Agricultural and Environmental Ethics* (supplement 2), 6:15-25.

Broom D.M and Johnson K.G., 1993. *Stress and animal welfare.* London: Chapman and Hall.

Broomberg A and Chanarin O., 2005. The lovely bones. *The Observer Magazine*, 23 January, pp.24-30.

Brown N and Michael M., 2004. Risky creatures: institutional species boundary change in biotechnology regulation. *Health, Risk and Society*, 6:207-222.

Browne A., 2001. Calf? I nearly died. *The Sunday Observer*, 29 April, pp.11-13.

Buchanan I., 1997. The problem with the body in Deleuze and Guattari, or, what can a body do? *Body and Society*, 3:73-91.

Budiansky S., 1995. *The covenant of the wild: why animals chose domestication.* New York: William Morrow.

Buller H., 2004. Where the wild things are: the evolving iconography of rural fauna. *Journal of Rural Studies*, 20:131-141.

Buller H and Morris C., 2003. Farm animal welfare: a new repertoire of nature-society relations or modernism re-embedded? *Sociologia Ruralis*, 43:216-237.

Bunce M., 1994. *The countryside ideal. Anglo-American images of landscape.* London: Routledge.

Burgess J, Clark J and Harrison C.M., 2000. Knowledges in action: an actor network analysis of a wetland agri-environment scheme. *Ecological Economics*, 35:119-132.

Burgess R., 1982. The unstructured interview as conversation. In: Burgess R.G (ed.), *Field research: a sourcebook and field manual.* London: George Allen and Unwin, pp.107-110.

Burne J., 2002. Animal instinct. *The Guardian*, 17 January, pp.14-15.

Butler J., 1993. *Bodies that matter. On the discursive limits of "sex".* London: Routledge.

Buttel F., 1998. Nature's place in the technological transformation of agriculture: some reflections on the recombinant BST controversy in the USA. *Environment and Planning A*, 30:1151-1163.

Buttel F., 2000. The recombinant BGH controversy in the United States: toward a new consumption politics of food? *Agriculture and Human Values*, 17:5-20.

Calarco M., 2004. Heidegger's ontology. In: Atterton P and Calarco M (eds.), *Animal philosophy. Ethics and identity: essential readings in continental philosophy.* London: Continuum, pp.18-30.

Callon M., 1986. Some elements of a sociology of translation: domestication of the scallops and the fishermen of St. Brieuc Bay. In: Law J (ed.), *Power, action and belief. A new sociology of knowledge.* London: Routledge and Kegan Paul, pp.196-234.

Callon M and Law J., 2004. Guest editorial. Introduction: absence-presence, circulation, and encountering in complex space. *Environment and Planning D: Society and Space*, 22:3-11.

Campbell J.R and Lasley J.F., 1985. *The science of animals that serve humanity.* New York: McGraw-Hill Book Company.

Carvalho M and Tolia-Kelly D., 2001. Intimate distance: fantasy islands and distant lakes. *Ecumene*, 8:112-119.

Casewell M, Friis C, Marco E, McMullin P and Phillips I., 2003. Review: the European ban on growth-promoting antibiotics and the emerging consequences for human and animal health. *Journal of Antimicrobial Chemotherapy*, 52:159-161.

Casey E.S., 2001a. Body, self and landscape. In: Adams P, Hoelscher S and Till K.E (eds.), *Textures of place. Exploring humanist geographies.* London: University of Minnesota Press, pp.403-425.

Casey E.S., 2001b. Between geography and philosophy: what does it mean to be in the place-world? *Annals of the Association of American Geographers*, 91:683-693.

Casey E.S., 2001c. On habitus and place: responding to my critics. *Annals of the Association of American Geographers*, 91:716-723.

Castree N., 1995. The nature of produced nature: materiality and knowledge construction in Marxism. *Antipode*, 27:12-48.

Castree N., 2003a. Editorial: reclaiming pedagogy. *Geoforum*, 34:283-285.

Castree N., 2003b. Commodifying what nature? *Progress in Human Geography*, 27:273-297.

Castree N., 2003c. Environmental issues: relational ontologies and hybrid politics. *Progress in Human Geography*, 27:203-211.

Castree N., 2004. Commentary: Nature is dead! Long live nature! *Environment and Planning A*, 36:191-194.

Castree N and Braun B., 1998. The construction of nature and the nature of construction. In: Braun B and Castree N (eds.), *Remaking reality. Nature at the millennium.* London: Routledge, pp.3-42.

Castree N and MacMillan T., 2004. Old news: representation and academic novelty. *Environment and Planning A*, 36:468-480.

Cave G.P., 1982. Animals, Heidegger, and the right to life. *Environmental Ethics*, 4:249-254.

Cheah P., 1996. Mattering. *Diacritics*, spring:108-139.

Chen N and Trinh M., 1994. Speaking nearby. In: Taylor L (ed.), *Visualizing theory: selected essays from V.A.R 1990-1994.* London: Routledge, pp.441-445.

Chilliard Y, Bonnet M, Delavaud C, Faulconnier Y, Leroux C, Dijiane J and Bocquier F., 2001. Leptin in ruminants. Gene expression in adipose tissue and mammary gland, and regulation of plasma concentration. *Domestic Animal Endocrinology*, 21:271-295.

Clark D., 1997. On being "the last Kantian in Nazi Germany". Dwelling with animals after Levinas. In: Ham J and Senior M (eds.), *Animal acts. Configuring the human in western history.* London: Routledge, pp.165-198.

Clark N., 2004. Feral ecologies: performing life on the colonial periphery. *The Sociological Review*, 52:163-182.

Clifford S and King A., 1993. Losing your place.
http://www.commonground.org.uk/Local_Distinctiveness.html.
Last accessed 2 May 2002.

Cloke P., 1993. On "problems and solutions": the reproduction of problems for rural communities in Britain during the 1980s. *Journal of Rural Studies*, 9:113-122.

Cloke P., 1997a. Poor country. Marginalization, poverty and rurality. In: Cloke P and Little J (ed.), *Contested countryside cultures.* London: Routledge, pp.252-272.

Cloke P., 1997b. Editorial: country backwater to virtual village? Rural studies and 'the cultural turn'. *Journal of Rural Studies*, 13:367-375.

Cloke P., 1999. Self-other. In: Cloke P, Crang P and Goodwin M (eds.), *Introducing human geographies.* London: Arnold, pp.43-53.

Cloke P., 2004. Exploring boundaries of professional/personal practice and action: being and becoming in Khayelistsha township, Cape Town. In: Fuller D and Kitchin R (eds.), *Radical theory / critical praxis: making a difference beyond the academy?* Praxis(e)press http://www.praxis-epress.org, pp.92-102.

Cloke P, Cooke P, Cursons J, Milbourne P and Widdowfield R., 2000. Ethics, reflexivity and research: encounters with homeless people. *Ethics, Place and Environment*, 3:133-154.

Cloke P and Jones O., 2001. Dwelling, place and landscape: an orchard in Somerset. *Environment and Planning A*, 33:649-666.

Cloke P and Jones O., 2003. Grounding ethical mindfulness for/in nature: trees in their places. *Ethics, Place and Environment*, 6:195-214.

Clutton-Brock J., 1981. *Domesticated animals from early times.* London: British Museum and Heinemann.

Clutton-Brock J., 1994. The unnatural world. Behavioural aspects of humans and animals in the process of domestication. In: Manning A and Serpell J (eds.), *Animals and human society.* London: Routledge, pp.23-35.

Coe S., 1995. *Dead meat.* New York: Four walls eight windows.

Compassion in World Farming (CIWF)., 2003. Animal sentience.
http://www.animalsentience.com
Last accessed 21 September 2003.

Conrad P., 2005. With murder in mind. *The Observer Review*, 6 March, pg 17.

Convery I, Bailey C, Mort M and Baxter J., 2005. Death in the wrong place? Emotional geographies of the UK 2001 foot and mouth disease epidemic. *Journal of Rural Studies*, 21:99-109.

Cook I, Crang P and Thorpe M., 1998. Biographies and geographies: consumer understandings of the origins of food. *British Food Journal*, 100:162-167.

Countryside Alliance., 2002. What is rural?
http://www.countryside-alliance.org/policy/whatis/whatishtm
Last accessed 10 June 2002.

CowParade., 2002.
http://londoncowparade.net/about/whycows.php.
Last accessed 19 June 2002.

CowParade., 2004. *CowParade Manchester: cow trail map.* Manchester: Manchester City Council.

Crang M., 2002. Commentary: between places, producing hubs, flows, and networks. *Environment and Planning A*, 34:569-574.

Crang M., 2003a. Qualitative methods: touchy, feely, look-see? *Progress in Human Geography*, 27:494-504.

Crang M., 2003b. Telling materials. In: Pryke M, Rose G and Whatmore S (eds.), *Using social theory. Thinking through research.* London: Sage Publications, pp.127-144.

Cresswell T., 1996. *In place / out of place. Geography, ideology and transgression.* London: University of Minnesota Press.

Crist E., 1999. *Images of animals: anthropomorphism and animal mind.* Philadelphia: Temple University Press.

Cronon W., 1990. Modes of prophecy and production: placing nature in history. *Journal of American History*, 76:1122-1131.

Cronon W., 1991. *Nature's metropolis. Chicago and the Great West.* London: W.W. Norton and Company.

Cumming L., 2004. Oh do look, a calf with six legs. *The Observer Review*, 7 March, pg 11.

Cunningham P.F., 1995. Topics awaiting further study: investigatable questions on animal issues. *Society and Animals*, 3: unpaginated.

Davidson J., 2003. 'Putting on a face': Satre, Goffman, and agoraphobic anxiety in social space. *Environment and Planning D: Society and Space*, 21:107-122.

Davies B and Harre R., 1990. Positioning the discursive production of selves. *Journal for the Theory of Social Behaviour*, 20:43-63.

Davies G., 1999. Exploiting the archive: and the animals came in two by two, 16mm, CD-ROM and BetaSp. *Area*, 31:49-58.

Davies G., 2003. Editorial: a geography of monsters. *Geoforum*, 34:409-412.

De Waal F., 2001. *The ape and the sushi master.* London: Penguin Books.

Deleuze G and Guattari F., 1988. *A thousand plateaus. Capitalism and schizophrenia.* London: The Athlone Press, Trans. B. Massumi.

Demeritt D., 1996. Social theory and the reconstruction of science and geography. *Transactions of the Institute of British Geographers*, 21:484-503.

Demeritt D., 2002. What is the 'social construction of nature'? A typology and sympathetic critique. *Progress in Human Geography*, 26:767-790.

Denzin N.K., 1997. *Interpretive ethnography. Ethnographic practices for the 21st century.* London: Sage Publications.

Desire L, Boissy L and Veissier I., 2002. Emotions in farm animals: a new approach to animal welfare in applied ethology. *Behavioural Processes*, 60:165-180.

Desmond J., 1999. *Staging tourism: bodies on display from Waikiki to Sea World.* Chicago: Chicago University Press.

Dewsbury J.D., 2000. Performativity and the event: enacting a philosophy of difference. *Environment and Planning D: Society and Space*, 18:473-496.

Dewsbury J.D, Harrison P, Rose M and Wylie J., 2002. Introduction: enacting geographies. *Geoforum*, 33:437-440.

Dion M., 2000. Short communication: the moral status of non-human beings and their ecosystems. *Ethics, Place and Environment*, 3:221-229.

Doel M., 1994. Deconstruction on the move: from libidinal economy to liminal materialism. *Environment and Planning A*, 26:1041-1059.

Donaldson A and Wood D., 2004. Surveilling strange materialities: categorization in the evolving geographies of FMD biosecurity. *Environment and Planning D: Society and Space*, 22:373-391.

Dorn M and Laws G., 1994. Social theory, body politics, and medical geography: extending Kearn's invitation. *Professional Geographer*, 46:106-110.

Douglas M., 1984. *Purity and danger*. London: Routledge.

Doyle R., 1998. Emergent power: vitality and theology in artificial life. In: Lenoir L (ed.), *Inscribing science, scientific texts and the materiality of communication*. London: Stanford University Press, pp.304-327.

Driver F., 2003. On geography as a visual discipline. *Antipode*, 35:227-231.

Duncan I.J.H., 1993. Welfare is to do with what animals feel. *Journal of Agricultural and Environmental Ethics*, 6:8-14.

DuPuis M., 2002. *Nature's perfect food. How milk became America's drink*. London: New York University Press.

Dusenbury D.B., 1992. *Sensory ecology*. Basingstoke: WH Freeman and Company.

Dusenbury D.B., 2001. Physical constraints in sensory ecology. In: Borth F.G and Schmid A (eds.), *Ecology of sensing*. London: Springer, pp.1-19.

Dyson-Hudson R., 1989. Ecological influences on systems of food production and social organization of South Turkana pastoralists. In: Standen V and Foley R.A (eds.), *Comparative socioecology. The behavioural ecology of humans and other mammals*. Oxford: Blackwell Science, pp.165-193.

Easterbrook G., 2002. Techno-vegetarianism: animal-free meat. *New Scientist*, 174:59-61.

Edensor T., 2002. British industrial ruins.
http://www.staffs.ac.uk/schools/humanities_and_soc_sciences/te1
Last accessed 10 August 2004.

Eisnitz G.A., 1997. *Slaughterhouse*. New York: Prometheus Books.

Elder G, Wolch J and Emel J., 1998. Race, place and the bounds of humanity. *Society and Animals*, 6:183-201.

Elder G, Wolch J and Emel J., 2002. Le pratique sauvage: race, place and the human-animal divide. In: Dear M.J and Flusty S (eds.), *The spaces of postmodernity. Readings in human geography*. Oxford: Blackwell Publishers, pp.431-442.

Ellen R., 1994. Modes of subsistence: hunting and gathering in agriculture and pastoralism. In: Ingold T (ed.), *Companion encyclopaedia of anthropology. Humanity, culture and social life*. London: Routledge, pp.197-225.

Ellis J.E and Swift D., 1988. Stability of African pastoral ecosystems: alternative paradigms and implications for development. *Journal of Range Management*, 41:450-459.

English Nature., 2002. *Traditional breeds incentive for sites of special scientific interest. Working today for nature tomorrow*. Taunton: Somerset and Gloucestershire branch of English Nature.

Enticott G., 2003. Lay immunology, local foods and rural identity: defending unpasteurised milk in England. *Sociologia Ruralis*, 42:257-270.

Environment, Food and Rural Affairs (EFRA) parliamentary committee., 2003. Vets and veterinary services.
http://www.publications.parliament.uk/pa/cm200203/cmselect/cmenvfro/703/703.pdf
Last accessed 1 June 2005.

Evans N and Yarwood R., 1995. Livestock and landscape. *Landscape Research*, 20:141-146.

Evans N and Yarwood R., 2000. The politicization of livestock: rare breeds and countryside conservation. *Sociologia Ruralis*, 40:228-248.

Farber C.R and Medrano J.F., 2003. Putative *in silico* mapping of DNA sequences to livestock genome maps using SSLP flanking sequences. *Animal Genetics*, 34:11-18.

Farm Animal Welfare Council (FAWC)., 2003. The five freedoms.
http://www.fawc.org.uk/freedoms.htm
Last accessed 2 July 2003.

Faull W.B, Hughes J.W, Clarkson M.J, Downham D.Y, Manson F.J, Merritt J.B, Murray R.D, Russell W.B, Sutherst J.E and Ward W.R., 1996. Epidemiology of lameness in dairy cattle: the influence of cubicles and indoor and outdoor walking surfaces. *Veterinary Record*, 139:130-136.

Faverdin P, Baumont R and Ingvartsen K.L., 1995. Control and prediction of feed intake in ruminants. In: Journet M, Grenet E, Farce M.H, Theriez M and Demarquilly C (eds.), *Recent developments in the nutrition of herbivores*. Paris: INRA Editions, pp. 95-120.

Fernandes T.H., 2005. European veterinary education: a bridge to quality. *The Veterinary Journal*, 169:210-215.

Fine B., 1998. *The political economy of diet, health and food policy*. London: Routledge.

Finnegan R., 2002. *Communicating. The multiple modes of human interconnection*. London: Routledge.

Fischler C., 1988. Food, self and identity. *Social Science Information*, 27:275-292.

Fitzsimmons M., 1989a. The matter of nature. *Antipode*, 21:106-120.

Fitzsimmons M., 1989b. Editorial: reconstructing nature. *Environment and Planning D: Society and Space*, 7:1-3.

Fitzsimmons M., 2004. Engaging ecologies. In: Cloke P, Crang P and Goodwin M (eds.), *Envisioning human geographies*. London: Arnold, pp.30-47.

Fitzsimmons M and Goodman D., 1998. Incorporating Nature. Environmental narratives and the reproduction of food. In: Braun B and Castree N (eds.), *Remaking reality. Nature at the millennium*. London: Routledge, pp.194-220.

Fox D.G, Sniffen C.J, O'Connor J.D, Russell J.B and Van Soest PJ., 1992. A net carbohydrate and protein system for evaluating cattle diets: cattle requirements and diet adequacy. *Journal of Animal Science*, 70:3566-3578.

Fox M.W., 2003. India's sacred cow: her plight and future. In: Armstrong S.J and Botzler R.G (eds.), *The animal ethics reader*. London: Routledge, pp.238-241.

Franklin A., 1999. *Animals and modern cultures. A sociology of human-animal relations in modernity*. London: Sage Publications.

Fraser A.F., 1971. *Animal reproduction.* London: Bailliere Tindall.

Fraser A.F and Broom D., 1996. *Farm animal behaviour and welfare.* Wallingford: CAB International.

Frey J.H and Fontana A., 1994. Interviewing: the art of science. In: Denzin N.K and Lincoln Y.S (eds.), *Handbook of qualitative research.* London: Sage Publications, pp.361-376.

Friedland W., 1985. Commodity systems analysis: an approach to the sociology of agriculture. *Research in Rural Sociology and Development*, 1:221-236.

Freidlberg S., 2003. Editorial. Not all sweetness and light: new cultural geographies of food. *Social and Cultural Geography*, 4:3-6.

Friskics S., 2001. Dialogical relations with nature. *Environmental Ethics*, 23:391-410.

Gamborg C and Sandoe P., 2005. Sustainability in farm animal breeding: a review. *Livestock Production Science*, 92:221-231.

Game A., 2001. Riding: embodying the centaur. *Body and Society*, 7:1-12.

Game A and Metcalfe A., 1996. *Passionate sociology.* London: Sage Publications.

Garner J., 2002. Stock and sales update. *Farmers Weekly*, 12-18 July, pp.28-30.

Gellatley J and Wardle T., 1996. *The silent ark. A chilling expose of meat – the global killer.* London: HarperCollins Publishing.

Gibbons F., 2003. Hirst accused of sadism over butterfly collage. *The Guardian*, 15 August, pp.18-19.

Gill R., 1996. Discourse analysis: methodological aspects. In: Richardson J.E (ed.), *Handbook of qualitative research methods for psychology and the social sciences.* Leicester: British Psychological Society, pp.141-156.

Gleeson B., 2000. Enabling geography: exploring a new political ethical ideal. *Ethics, Place and Environment*, 3:65-69.

Glendinning S., 1998. *On being with others. Heidegger-derrida-wittgenstein.* London: Routledge.

Glendinning S., 2000. From animal life to city life. *Angelaki*, 5:19-30.

Goffman E., 1971. *The presentation of self in everyday life.* London: Penguin Books.

Gold M., 1995. *Animal rights.* New York: John Carpenter Publishing.

Goodall J., 1986. *The chimpanzees of Gombe. Patterns of behaviour.* London: The Belknap Press.

Goodall J., 1990. *Through a window.* Boston: Houghton Mifflin.

Goodman D., 1999. Agro-food studies in the 'age of ecology': nature, corporeality and bio-politics. *Sociologia Ruralis*, 39:17-38.

Goodman D., 2001. Ontology Matters: the relational materiality of nature and agro-food studies. *Sociologia Ruralis*, 41:182-200.

Goodman D and DuPuis M., 2002. Knowing food and growing food: beyond the production-consumption debate in the sociology of agriculture. *Sociologia Ruralis*, 42:5-22.

Goss-Custard J.D and Sutherland W.J., 1997. Individual behaviour, populations and conservation. In: Krebs J.R and Davies N.B (eds.), *Behavioural ecology: an evolutionary approach.* Oxford: Blackwell Science, pp.373-395.

Gouveia L and Juska A., 2002. Taming nature and taming workers: constructing the separation between meat consumption and meat production in the U.S. *Sociologia Ruralis*, 42:370-390.

Graham E.L., 2002. *Representations of the post/human: monsters, aliens and others in popular culture.* Manchester: Manchester University Press.

Grandin T., 1998. Reducing stress improves both productivity and welfare. *Professional Animal Scientist*, 14:1-10.

Grandin T., 2003a. Transferring results of behavioural research to industry to improve animal welfare on the farm, the ranch and the slaughter plant. *Applied Animal Behaviour Science*, 81:215-228.

Grandin T., 2003b. Thinking like animals. In: Armstrong S.J and Botzler R.G (eds.), *The animal ethics reader.* London: Routledge, pp.184-186.

Griggs K., 2002. 'Human' cow milk an MS aid?
http://www.wired.com/news/technology/0,1282,37921,00.html
Last accessed 12 July 2002.

Guattari F., 2000. *The three ecologies.* London: The Athlone Press, Trans. I. Pinder and P.Sutton.

Gullo A, Lassiter U and Wolch J., 1998. The cougar's tale. In: Wolch J and Emel J (eds.), *Animal geographies: place, politics and identity in the nature-culture borderlands.* London: Verso, pp.139-161.

Halfacree K., 1996. Out of place in the country: travellers and the rural idyll. *Antipode*, 28:42-72.

Hall E., 2004. Round the horn. *The Observer Magazine*, 10 October, pp.38-41.

Hamilton T., 1991. Agriculture and food fact sheet: basic cattle nutrition.
http://www.gov.on.ca/OMAFRA/english/livestock/beef/facts/91-066.htm
Last accessed 19 November 2003.

Hammond J, Bowman J.C and Robinson T.J., 1983. *Hammond's farm animals.* London: Edward Arnold.

Hanson L.B., 2000. Consequences of selection for milk yield from a geneticist's point of view. *Journal of Dairy Science*, 83:1145-1150.

Haraway D., 1989. *Primate visions: gender, race and nature in the world of modern science.* London: Routledge.

Haraway D., 1991. *Simians, cyborgs and women: the reinvention of nature.* London: Free Association Books.

Haraway D., 1997. *Modest_Witness@Second_Millennium. FemaleMan©_Meets_OncoMouse™. Feminism and technoscience.* London: Routledge.

Haraway D., 2000. *How like a leaf. An interview with Thyrza Nichols Goodeve.* London: Routledge.

Haraway D., 2003a. *The companion species manifesto. Dogs, people and significant otherness.* Chicago: Prickly Paradigm Press.

Haraway D., 2003b. Interview with Donna Haraway. In: Ihde D and Selinger E (eds.), *Chasing technoscience - matrix for reality.* Blommington: Indiana University Press, pp 47-58.

Harmon R.J., 1994. Physiology of mastitis and factors affecting somatic cell counts. *Journal of Dairy Science*, 77:2103-2112.

Harrison P., 2000. Making sense: embodiment and the sensibilities of the everyday. *Environment and Planning D: Society and Space*, 18:497-517.

Harvey D., 1990. Between space and time: reflections on the geographical imagination. *Annals of the Association of American Geographers*, 80:418-434.

Haworth L, Brunk C, Jennex D, and Arai S., 1998. A dual-perspective model of agroecosystems health: system functions and system goals. *The Journal of Agricultural and Environmental Ethics*, 10:127-152.

Hayasaka K, Takusari N and Yamagishi N., 1995. Energy metabolism in lactating Holstein cows. *Animal Science and Technology*, 66:374-382.

Hayles K., 1999. *How we became post-human. Virtual bodies in cybernetics, literature and informatics.* London: University of Chicago Press.

Heidegger M., 1971. *Poetry, language, thought.* London: Harper and Row, Trans. A. Hofstadter.

Heidegger M., 1995. *The fundamental concepts of metaphysics: world, finitude, solitude.* Bloomington: Indiana University Press, Trans. W. McNeill and N. Walker.

Hemsworth P.H and Coleman G.J., 1998. *Human-livestock interactions.* Wallingford: CAB International.

Hendry R, Bacon P.J, Moss R, Palmer S.C.F and McGlade J.M., 1997. A two-dimensional individual-based model of territorial behaviour: possible population consequences of kinship in Red Grouse. *Ecological Modelling*, 105:23-29.

Hetherington K., 1997a. Museum typology and the will to connect. *Journal of Material Culture*, 2:199-218.

Hetherington K., 1997b. In place of geometry: the materiality of place. In: Hetherington K and Munro R (eds.), *Ideas of difference: social spaces and the labour of division.* Oxford: Blackwell Publishers, pp.183-199.

Hetherington K., 2004. Secondhandedness: consumption, disposal, and the absent presence. *Environment and Planning D: Society and Space*, 22:157-173.

Hetherington K and Law J., 2000. Guest editorial: after networks. *Environment and Planning D: Society and Space*, 18: 127-132.

Hetherington K and Lee N., 2000. Social order and the blank figure. *Environment and Planning D: Society and Space*, 18:169-184.

Hinchliffe S., 2000a. Performance and experimental knowledge: outdoor management training and the end of epistemology. *Environment and Planning D: Society and Space*, 18:575-595.

Hinchliffe S., 2000b. Entangled Humans. Specifying powers and their spatialities. In: Sharp J.P, Routledge P, Philo C and Paddison R (eds.), *Entanglements of power. Geographies of domination and resistance.* London: Routledge, pp.219-237.

Hinchliffe S., 2001. Indeterminacy in – decisions – science, policy and politics in the BSE (Bovine Spongiform Encephalopathy) crisis. *Transactions of the Institute of British Geographers*, 26:182-204.

Hinchliffe, S., 2003. 'Inhabiting' – landscapes and natures. In: Anderson K, Domosh M, Pile S and Thrift N (eds.), *Handbook of cultural geography.* London: Sage Publications, pp.207-225.

Holloway L., 2001. Pets and protein: placing domestic livestock on hobby-farms in England and Wales. *Journal of Rural Studies*, 17:293-307.

Holloway L., 2004a. Farms. In: Harrison S, Pile S and Thrift N (eds.), *Patterned ground. Entanglements of nature and culture.* London: Reaktion Books Limited, pp.203-205.

Holloway L., 2004b. Showing and telling farming: agricultural shows and re-imaging British agriculture. *Journal of Rural Studies*, 20:319-330.

Holloway L., 2005 (forthcoming). Aesthetics, genetics and evaluating animal bodies: locating and displacing cattle on show and in figures. *Environment and Planning D: Society and Space.*

Hopkins T.K and Wallerstein I., 1986. Commodity chains in the world economy prior to 1800. *Review*, 10:157-170.

Hosey G.R., 2000. Zoo animals and their human audiences: what is the visitor effect? *Animal Welfare*, 9:343-357.

IceRobotics., 2004. Robotic milking wins further investment.
http://www.nesta.org.uk/mediaroom/newsreleases/3922/print.html
Last accessed 21 January 2005.

Ingold T., 1989. The social and environmental relations of human beings and other animals. In: Standen V and Foley R.A (eds.), *Comparative socioecology. The behavioural ecology of humans and other mammals.* Oxford: Blackwell Science, pp.495-512.

Ingold T., 1994a. Introduction. In: Ingold T (ed.), *What is an animal?* London: Routledge, pp.1-16.

Ingold T., 1994b. From trust to domination. An alternative history of human-animal relations. In: Manning A and Serpell J (eds.), *Animals and human society.* London: Routledge, pp.1-22.

Ingold T., 1995. Building, dwelling, living: how animals and people make themselves at home in the world. In: Strathern M (ed.), *Shifting contexts: transformations in anthropological knowledge.* London: Routledge, pp.57-80.

Ingold T., 1996. Growing plants and raising animals: an anthropological perspective on domestication. In: Harris D (ed.), *The origins and spread of agriculture and pastoralism in Eurasia.* London: UCL Press, pp.12-24.

Ingold T., 2000. *The Perception of the Environment. Essays in livelihood, dwelling and skill.* London: Routledge.

International Bull Evaluation Service (INTERBULL)., 2005. International genetic evaluations.
http://www-interbull.slu.se/summary/summary.html
Last accessed 14 January 2005.

Irigaray L., 2004. Animal compassion. In: Atterton P and Calarco M (eds.), *Animal philosophy. Essential readings in continental thought.* London: Continuum, pp.195-201, Trans. M. Gaddis Rose.

Irvine J., 2004. Editorial: how reliable is the British Cattle Tracing System online?
http://www.land-care.org.uk/social_economic/current_topics/2004/april2004/ctsonline...
Last accessed 19 March 2005.

Jackson P., 2002. Commercial cultures: transcending the cultural and the economic. *Progress in Human Geography*, 26:3-18.

Jasanoff S., 1996. Is science socially constructed - and can it still inform public policy? *Science and Engineering Ethics*, 12:263-276.

Jensen K.K and Sorensen J.T., 1999. The idea of "ethical accounting" for a livestock farm. *The Journal of Agricultural and Environmental Ethics*, 11:85-100.

Jha D.N., 2002. *The myth of the holy cow*. London: Verso.

Johnson A., 1996. Animals as food producers. In: Mepham B (ed.), *Food ethics*. London: Routledge, pp.49-64.

Jones O., 2000. (Un)ethical geographies of human-non-human relations: encounters, collectives and spaces. In: Philo C and Wilbert C (eds.), *Animal spaces, beastly places. New geographies of human-animal relations*. London: Routledge, pp.268-291.

Jones O., 2003. 'The restraint of beasts': rurality, animality, Actor Network theory and dwelling. In: Cloke P (ed.), *Country visions*. Harlow: Pearson Education Limited, pp.283-307.

Jones O and Cloke P., 2002. *Tree Cultures. The place of trees and trees in their place*. Oxford: Berg.

Katz J., 1999. *How emotions work*. London: University of Chicago Press.

Kean H., 1998. *Animal rights. Political and social change in Britain since 1800*. London: Reaktion Books Limited.

Kennedy J.S., 1992. *The new anthropomorphism*. Cambridge: Cambridge University Press.

Kilgour R., 1985. Defining the behaviour characteristics of farm animals. In: Fraser D (ed.), *A comprehensive study of the behavioural features of common animals*. London: Elsevier Science, pp.445-458.

Koehl M.A.R., 1989. From individuals to populations. In: Roughgarden J, May R.M and Levin S.A (eds.), *Perspectives in ecological theory*. Woodstock: Princeton University Press, pp.39-53.

Kossaibati MA, Hovi M and Esslemont R.J., 1998. Incidence of mastitis in dairy herds in England. *The Veterinary Record*, 143:649-653.

Krebs J.R and Davies B., 1993. *An introduction to behavioural ecology*. Oxford: Blackwell Science.

Kreger M.D and Mench J.A., 1995. Visitor-animal interactions at the zoo. *Anthrozoös*, 8:143-158.

Kvale S., 1996. *Interviews: an introduction to qualitative research interviewing*. London: Sage Publications.

Lanza R.P, Cibelli J.B, Faber D, Sweeney R.W, Henderson B, Nevala W, West M.D and Wettstein P.J., 2001. Cloned cattle can be healthy and normal. *Science*, 294:1893-1894.

Latham A., 2003. Research, performance and doing in human geography: some reflections on the diary-photograph, diary-interview method. *Environment and Planning A*, 35:1993-2017.

Latour B., 1987. *Science in action. How to follow scientists and engineers through society*. London: Harvard University Press.

Latour B., 1993. *We have never been modern*. London: Pearson Education Limited, Trans. C. Porter.

Latour B., 2004a. *Politics of nature. How to bring the sciences into democracy.* London: Harvard University Press. Trans. C. Porter.

Latour B., 2004b. Nonhumans. In: Harrison S, Pile S and Thrift N (eds.), *Patterned ground. Entanglements of nature and culture.* London: Reaktion Books Limited, pp.224-227.

Laurier E and Parr H., 1999. Emotions and interviewing. *Ethics, Place and Environment*, 3:98-102.

Laurier E and Philo C., 1999. X-morphising: a review essay of Aramis. *Environment and Planning A*, 31:1047-1073.

Law J., 1986. On methods of long-distance control: vessels, navigation and the Portuguese route to India. *Sociological Review Monograph*, 32:234-263.

Law J., 2000. Comment on Suchman, and Gherardi and Nicolini: knowing as displacing. *Organization*, 7:349-354.

Leake J., 2005. The secret life of moody cows. *The Sunday Times*, 27 February
http://www.timesonline.co.uk/article/0,,2087-1502933,00.htm
Last accessed 3 June 2005.

Leder D., 1990. *The absent body.* London: University of Chicago Press.

LeDuff C., 2003. At a slaughterhouse, some things never die. In: Wolfe C (ed.), *Zoontologies. The question of the animal.* London: University of Minnesota Press, pp.183-199.

Leigh-Star S., 1991. Power, technology and the phenomenology of conventions: on being allergic to onions. In: Law J (ed.), *A sociology of monsters. Essays on power, technology and domination.* London: Routledge, pp.26-57.

Leslie D and Reimer S., 1999. Spatializing commodity chains. *Progress in Human Geography*, 23:401-420.

Levi-Strauss C., 1965. The culinary triangle. *Partisan Review*, 33:586-595.

Levy D., 1997. *Diary of a steak.* London: Book Works.

Lewis N.J and Hurnik J.F., 1998. Handling ease of dairy cattle and the effects of some common management practices. *Applied Animal Behaviour Science*, 58:213-220.

Light J., 1997. The changing nature of nature. *Ecumene*, 4:181-195.

Lima S.L and Zollner P.A., 1996. Towards a behavioural ecology of ecological landscapes. *Trends in Ecological Evolution*, 11:131-135.

Livingston J., 1994. *Rogue primate. An exploration of human domestication.* Boulder, Colorado: Roberts Rinehart Publishers.

Lomnicki A., 1988. *Population ecology of individuals.* Woodstock: Princeton University Press.

Longhurst R., 2001. *Bodies: exploring fluid boundaries.* London: Routledge.

Lorimer H., 2004. Herding memories of humans and animals.
http://web.geog.gla.ac.uk/olpapers/hlorimer001.pdf
Last accessed 4 June 2004.

Lorimer H., 2005. Cultural geography: the busyness of being 'more-than-representational'. *Progress in Human Geography*, 29:83-94.

Lukla D., 2004. Stabilizing the herd: fixing the identity of nonhumans. *Environment and Planning D: Society and Space*, 22:439-463.

Lund MS, Jensen J and Peterson P.H., 1999. Estimation of genetic and phenotypic parameters for clinical Mastitis, somatic cell production deviance, and protein yield in dairy cattle using Gibbs sampling. *Journal of Dairy Science*, 82:1045-1051.

Lupton D., 1996. *Food, the body and the self.* London: Sage Publications.

Lynch M., 1988. Sacrifice and the transformation of the animal body into scientific object: laboratory culture and ritual practice in the neurosciences. *Social Studies of Science*, 18:265-289.

Macfarlane R., 1998. Implementing agri-environmental policy: a landscape ecology perspective. *Journal of Environmental Planning and Management*, 41:575-596.

Macnaghten P., 2003. Embodying the environment in everyday life practices. *Sociological Review*, 51:63-84.

Maehle A.H., 1994. Cruelty and kindness to the 'brute creation'. Stability and change in the ethics of man-animal relationship, 1600-1850. In: Manning A and Serpell J (eds.), *Animals and human society.* London: Routledge, pp.81-105.

Maple T.L, McManamom R and Stevens E.F., 1995. Defining the good zoo: animal care, maintenance and welfare. In: Norton B.G, Hutchins M, Stevens E.F and Maple T.L (eds.), *Ethics of the ark: zoos, animal welfare and wildlife conservation.* Washington: Smithsonian Institution Press, pp.219-234.

Marcus G.E., 1998. Ethnography in / of the world system. The emergence of multi-sited ethnography. In: Marcus G.E (ed.), *Ethnography through thick and thin.* Woodstock: Princeton University Press, pp.79-104.

Martin E., 1992. The end of the body? *American Ethnologist*, 19:121-141.

Martin E., 1998. Fluid bodies, managed nature. In: Braun B and Castree N (eds.), *Remaking reality. Nature at the millennium.* London: Routledge, pp.64-84.

Marvin G., 2004. A passionate pursuit: foxhunting as performance. *The Sociological Review*, 52:46-60.

Massey D., 2003. Imagining the field. In: Pryke M, Rose G and Whatmore S (eds.), *Using social theory. Thinking through research.* London: Sage Publications, pp.71-88.

McCabe J.T., 2003. Disequilibria ecosystems and livelihood diversification among the Maasai of Northern Tanzania: implications for conservation policy in Eastern Africa. *Nomadic Peoples*, 7:74-91.

McCormack D., 2004. Cultural geographies in practice. Drawing out the lines of the event. *Cultural Geographies*, 11:211-220.

McEvoy A.F., 1989. Towards an interactive theory of nature and culture: ecology, production and cognition in the California fishing industry. In: Worster D (ed.), *The ends of the earth. Perspectives in modern environmental history.* Cambridge: Cambridge University Press, pp.219-225.

McGlade J.M., 1999. Individual-based models in ecology. In: McGlade J.M (ed.), *Advanced ecological theory. Principles and applications.* Oxford: Blackwell Science, pp.1-27.

McGregor P and Peake T., 1998. The role of individual identification in conservation biology. In: Caro T (ed.), *Behavioural ecology and conservation biology.* Oxford: Oxford University Press, pp.31-55.

McHugh S., 2001. Video dogstar: William Wegman, aesthetic agency, and the animal in experimental video art. *Society and Animals*, 9: 229-251.

McIntosh W.A., 1996. *Sociologies of food and nutrition.* New York: Plenum.

McKie R., 2004. Prehistoric clues put greenhouse accomplices in the dock. *The Observer*, 11 July, pg.6.

McLean C and Hassard J., 2004. Symmetrical absence/symmetrical absurdity: critical notes on the production of actor-network accounts. *Journal of Management Studies*, 41:493-519.

McNay L., 1996. Review: bodies in transition. *Radical Philosophy*, 78:34-36.

Mead M., 1995. Introduction: visual anthropology. In: Hockings P (ed.), *Principles of visual anthropology.* The Hague: Mouton Publishers, pp.3-10.

Mech D.L., 1995. A ten year history of the demography and productivity of an artic wolf pack. *Artic*, 48:329-332.

Melrose S., 2002a. Before the post human can take (its) place: performing place and person in the early 21st century.
http://www/sfmelrose.u-net.com/preposthuman/
Last accessed 2 August 2004.

Melrose S., 2002b. Textual turns and a turn-up for the books.
http://www.sfmelrose.u-net.com/nottingham
Last accessed 2 August 2004.

Mennell S, Murcott A and Vanotterloo A.H., 1993. *The sociology of food and eating.* London: Sage Publications.

Michael M., 2000. *Reconnecting culture, technology and nature. From society to heterogeneity.* London: Routledge.

Mill J.M and Ward W.R., 1993. Lameness in dairy cattle and farmers' knowledge, training and awareness. *Veterinary Record*, 134:162-164.

Mitchell A.R., 2005. European veterinary education: what does harmonization mean? *The Veterinary Journal*, 169:157-158.

Morton D.B and Griffiths P.H.M., 1985. Guidelines on the recognition of pain, distress and discomfort in experimental animals and a hypothesis for assessment. *Veterinary Record*, 20:431-436.

Moss P., 2000. *Elephant memories.* London: University of Chicago Press.

Mrode R.A, Swanson G.J.T and Winters M.S., 1998. Genetic parameters and evaluations for somatic cell counts and its relations with production and type traits in some dairy breeds in the United Kingdom. *Animal Science*, 66:569-576.

Mrode R.A, Swanson G.J.T and Lindberg C.M., 2002. Efficiency of part lactation test day records for genetic evaluations using fixed and random regression models. *Animal Science*, 74:189-197.

Mrozek M, Fischer R, Trendelenburg M and Zillman U., 1995. Microchip implant system used for animal identification in laboratory rabbits, guinea pigs, woodchucks and amphibians. *Laboratory Animals*, 29:339-344.

Mullin M.H., 1999. Mirrors and windows: sociocultural studies of human-animal relationships. *Annual Review of Anthropology*, 28:224-281.

Murdoch J., 1997a. Inhuman/nonhuman/human: actor-network theory and the prospects for a nondualistic and symmetrical perspective on nature and society. *Environment and Planning D: Society and Space*, 15:731-756.

Murdoch J., 1997b. Towards a geography of heterogeneous associations. *Progress in Human Geography*, 21:321-337.

Murdoch J., 2001. Ecologising sociology: actor-network theory, co-construction and the problem of human exemptionalism. *Sociology*, 35:111-133.

Murdoch J., 2003. Editorial: geography's circle of concern. *Geoforum*, 29:357-374.

Musschenga A., 2002. Naturalness: beyond animal welfare. *The Journal of Agricultural and Environmental Ethics*, 15:171-186.

Mynott A., 2003. Hard times for holy cows.
http://news.bbc.co.uk/2/hi/south_asia/3152508.stm
Last accessed 27 April 2004.

Nash C., 2000. Performativity in practice: some recent work in cultural geography. *Progress in Human Geography*, 24:653-664.

Nash C., 2003. Cultural geography: anti-racist geographies. *Progress in Human Geography*, 27:637-648.

Nash C., 2004. Genetic kinship. *Cultural Studies*, 18:1-33.

Nast H.J., 2005. Representing possibilities: the DuSable Museum meets Kano palace. *Cultural Geographies*, 12:89-101.

National Research Council (NRC)., 2001. *Nutrient requirements of dairy cattle.* Washington: National Academy Press.

Newman F and Holzman L., 1997. *The end of knowing. A new developmental way of learning.* London: Routledge.

Newton I., 1995. The contribution of some recent research on birds to ecological understanding. *Journal of Animal Ecology*, 64:675-696.

Nicol C., 1996. Farm animal cognition. *Animal Science*, 62:375-391.

Niva T., 1995. Retention of visible implant tags by juvenile brown trout. *Journal of Fish Biology*, 46:997-1002.

Odum E.P., 1983. *Basic ecology.* London: Saunders College Publishing.

O'Neill J., 2001. Representing people, representing nature, representing the world. *Environment and Planning C: Government and Policy*, 19:483-500.

Orskov E.R and Ryle M., 1990. *Energy nutrition in ruminants.* London: Elsevier Science.

O'Sullivan S., 2001. The aesthetics of affect. Thinking art beyond representation. *Angelaki*, 6:125-135.

Palmer C., 2003a. Placing animals in urban environmental ethics. *Journal of Social Philosophy*, 34:64-78.

Palmer C., 2003b. Colonization, urbanization, and animals. *Philosophy and Geography*, 6:47-58.

Panskepp J., 1998. *Affective neuroscience: the foundations of human and animal emotions.* Oxford: Oxford University Press.

Parr H., 1998. Mental health, ethnography and the body. *Area*, 30:28-37.

Parr H., 2002a. Medical geography: diagnosing the body in medical and health geography? *Progress in Human Geography*, 26:240-251.

Parr H., 2002b. New body-geographies: the embodied spaces of health and medical information on the internet. *Environment and Planning D: Society and Space*, 20:73-95.

Paul E.S and Podberscek A.L., 2000. Veterinary education and students' attitudes towards animal welfare. *Veterinary Record*, 146:269-272.

People for the Ethical Treatment of Animals (PETA)., 2002. PETA files legal complaints to stop deceptive dairy Ads.
http://www.peta.org/feat/caldairy/complaint.html
Last accessed 21 December 2002.

People for the Ethical Treatment of Animals (PETA)., 2003. PETA files complaint over school milk sales.
http://www.milksucks.com/flamilk.html
Last accessed 29 November 2003.

Peters A.R and Ball P.J.H., 1996. *Reproduction in cattle.* Oxford: Blackwell Science.

Peters J.L, Senger P.L, Rosenberger J.L and O'Connor M.L.D., 1984. Radiographic evaluation of bovine artificial insemination techniques among professional and herdsmen inseminators. *Journal of Animal Science*, 59:1671.

Phelan P., 1996. *Unmarked. The politics of performance.* London: Routledge.

Phelan P., 1997. *Mourning sex: performing public memories.* London: Routledge.

Phillips M.T., 1994. Proper names and the social construction of biography. The negative case of laboratory animals. *Qualitative Sociology*, 17:119-143.

Philo C., 1992. Neglected rural geographies: a review. *Journal of Rural Studies*, 8:193-207.

Philo C., 1995. Animals, geography and the city: notes on inclusions and exclusions. *Environment and Planning D: Society and Space*, 13:655-681.

Philo C., 1997. 'Of other rurals?' In: Cloke P and Little J (eds.), *Contested countryside cultures: otherness, marginalization and rurality.* London: Routledge, pp.19-50.

Philo C., 2005. Spacing lives and lively spaces: partial remarks on Sarah Whatmore's Hybrid Geographies. *Antipode*, 37:824-833.

Philo C and Parr H., 2003. Introducing psychoanalytic geographies. *Social and Cultural Geography*, 4:283-293.

Philo C and Wilbert C., 2000. Animal spaces, beastly places. In: Philo C and Wilbert C (eds.), *Animal spaces, beastly places. New geographies of human-animal relations.* London: Routledge, pp.1-35.

Pickering A., 1993. The mangle of practice: agency and emergence in the sociology of science. *American Journal of Sociology*, 99:559-589.

Pink S., 1998. From ritual sacrifice to media commodity. Anthropological and media constructions of the Spanish bullfight and the rise of women performers. In: Hughes-Freeland F (ed), *Ritual, performance, media.* London: Routledge, pp.121-140.

Pink S., 2001. More visualising, more methodologies: on video, reflexivity and qualitative research. *The Sociological Review*, 49:586-599.

Plumwood V., 1999. Paths beyond human-centeredness: lessons from liberation struggles. In: Weston A (ed.), *An invitation to environmental philosophy.* Oxford: Oxford University Press, pp.69-105.

Plumwood V., 2000. Integrating ethical frameworks for animals, humans and nature: a critical feminist eco-socialist analysis. *Ethics and Environment*, 5:285-322.

Plumwood V., 2002. *Environmental culture. The ecological crisis of reason.* London: Routledge.

Pollock D., 1998. Performing writing. In: Phelan P and Lane J (eds.), *The ends of performance.* London: New York University Press, pp.73-103.

Porath M., 1998. Spain's dance with death.
http://www.abcnews.go.com/sections/world/DailyNews/pamplona_bullfighting.html
Last accessed 12 December 2003.

Potter J and Wetherell M., 1995. Discourse analysis. In: Smith J, Harre R and Van Langenhove R (eds.), *Rethinking methods in psychology.* London: Sage Publications, pp.80-92.

Poysko M., 1994. The blessed noise and little moo. Aspects of soundscape in cowsheds. In: Jarviluoma H (ed.), *Soundscapes. Essays on vroom and moo.* Finland: Institute of Rhythmic Music, pp71-89, Trans. B. Johnson and H. Jarvilouma.

Price E.O., 1999. Behavioural development in animals undergoing domestication. *Applied Animal Behaviour Science*, 65:245-271.

Prins B., 1995. The ethics of hybrid subjects: feminist constructivism according to Donna Haraway. *Science, Technology and Human Values*, 20:352-367.

Probyn E., 1996. *Outside belongings.* London: Routledge.

Probyn E., 1999. Beyond food/sex. Eating and an ethics of existence. *Theory, Culture and Society*, 16:215-228.

Probyn E., 2000. *Carnal appetites. Food sex identities.* London: Routledge.

Radley A., 1999. The aesthetics of illness: narrative, horror and the sublime. *Sociology of Health and Illness*, 21:778-796.

Radley A., 2002. Editorial. 'cases' and voices: the changing agendas for doctors and patients. *Postgraduate Medical Journal*, 78:701-712.

Radley A and Chamberlain K., 2001. Health psychology and the study of the case: from method to analytic concern. *Social Science and Medicine*, 53:321-332.

Radley A and Taylor D., 2003. Images of recovery: a photo-elicitation study on the hospital ward. *Qualitative Health Research*, 13:77-99.

Read A., 2000. Acknowledging the imperative of performance in the infancy of theatre. *Performance Research*, 5:61-69.

Read A., 2004. Prodigious performance.
http://www.roehampton.ac.uk/artshum/arts/performance/green%20room/prodigious.html/
Last accessed 22 October 2004.

Reason M., 2003. Archive or memory? The detritus of live performance. *New Theatre Quarterly*, 19:82-89.

Regan T., 1998. The case for animal rights. In: Cahn S.M and Markie P (eds.), *Ethics: history, theory and contemporary issues*. Oxford: Oxford University Press, pp.821-829.

Richley R., 2003. On the moove. *The Guardian Society supplement*, 30 April, pg.5.

Ridout N., 2004. Animal labour in the theatrical economy. *Theatre Research International*, 29:57-65.

Rifkin J., 1993. *Beyond beef. The rise and fall of cattle culture.* New York: Plume Books.

Robbins P., 1999. Meat matters: cultural politics along the commodity chain in India. *Ecumene*, 6:399-423.

Rodrigue C., 1992. Can religion account for early animal domestication? A critical assessment of the cultural geographic argument, based on near eastern archaeological data. *Professional Geographer*, 44:417-430.

Rollin B.E., 1989. *The unheeded cry: animal consciousness, animal pain, and science.* Oxford: Oxford University Press.

Rollin B.E., 1999. *An introduction to veterinary ethics: theory and cases.* Iowa City: Iowa University Press.

Rollin B.E., 2003a. Scientific ideology, anthropomorphism, anecdote, and ethics. In: Armstrong S.J and Botzler R.G (eds.), *The animal ethics reader.* London: Routledge, pp.67-74.

Rollin B.E., 2003b. Animal pain. In: Armstrong S.J and Botzler R.G (eds.), *The animal ethics reader.* London: Routledge, pp.86-91.

Rolls E.T., 1999. *The brain and emotion.* Oxford: Oxford University Press.

Rose G., 2003. Family photographs and domestic spacings: a case study. *Transactions of the Institute of British Geographers*, 28:5-18.

Roth W.M and Bowen G.M., 1999a. Digitizing lizards: the topology of 'vision' in ecological fieldwork. *Social Studies of Science*, 29:719-764.

Roth W.M and Bowen G.M., 1999b. Of cannibals, missionaries and converts: graphing competencies from grade 8 to professional science inside (classrooms) and outside (field/laboratory). *Science, Technology and Human Values*, 24:179-212.

Rowlands M., 2002. *Animals like us.* London: Verso.

Roy J.H.B., 1980. *The calf.* London: Butterworths.

Royal College of Veterinary Surgeons (RCVS)., 2003. The guide to professional conduct. http://www.rcvs.org.uk/vet_surgeons/professionalconduct/response/intro.html Last accessed 16 August 2004.

Rupp R and Boichard D., 1999. Genetic parameters for clinical Mastitis, somatic cell score, production, udder type traits, and milking ease in first lactating Holsteins. *Journal of Dairy Science*, 82:2198-2204.

Rushen J., 2003. Changing concepts of farm animal welfare: bridging the gap between applied and basic research. *Applied Animal Behaviour Science*, 81:199-214.

Russell K.N., 1962. *Fishwick's dairy farming.* London: Crosby Lockwood and Son Limited.

Ryder R.D., 2000. *Animal revolution. Changing attitudes towards speciesism.* Oxford: Berg.

Sabloff A., 2001. *Reordering the natural world. Humans and animals in the city.* London: University of Toronto Press.

Sanders C.R and Hirschman E.C., 1996. Guest editor's introduction - involvement with animals as consumer experience. *Society and Animals*, 4:unpaginated.

Sauer C., 1969. *Seeds, spades, hearths and herds.* London: MIT Press.

Sayer A., 1979. Epistemology and conceptions of people and nature in geography. *Geoforum*, 10:19-43.

Schafer R.M., 1977. *The tuning of the world.* New York: Knopf.

Schaller G.B., 1963. *The mountain gorilla. Ecology and behaviour.* London: University of Chicago Press.

Schlosser E., 2001. *Fast food nation. What the all-american meal is doing to the world.* London: Penguin Books.

Schmidt A., 1971. *The concept of nature in Marx.* London: New Left Books.

Schmidt G.H and Van Vleck L.D., 1974. *Principles of dairy science.* Basingstoke: W.H Freeman and Company.

Scoones I., 1996. Introduction. In: Scoones I (ed.), *Living with uncertainty: new directions in pastoral development in Africa.* London: Intermediate Technology Publications, pp.1-36.

Scoones I., 1999. New ecology and the social sciences: what prospects of a fruitful engagement? *Annual Review of Anthropology*, 28:479-507.

Scott A, Christie M and Midmore P., 2004. Impact of the 2001 foot-and-mouth disease outbreak in Britain: implications for rural studies. *Journal of Rural Studies*, 20:1-14.

Scott G.B and Kelly M., 1989. Cattle cleanliness in different housing systems. *Farm Building Progress*, 95:21-24.

Serpell J., 1996. *In the company of animals. A study of human-animal relationships.* Cambridge: Cambridge University Press.

Shapiro K., 1989. The death of the animal: ontological vulnerability. *Between the Species*, 5:183-193.

Shapriro K., 1990. Understanding dogs through kinaesthetic empathy, social construction, and history. *Anthrozoös*, 3:184-195.

Shapiro K., 2002. A rodent for your thoughts: the social construction of animal models. In: Henninger-Voss M (ed.), *Animals in human histories*. New York: University of Rochester Press, pp.439-469.

Shiva V., 2000. *Stolen harvest: the hijacking of the global food supply*. London: Pluto Press.

Sibley D., 2000. Placing anxieties. In: Cook I, Crouch D, Naylor S and Ryan J.R (eds.), *Cultural turns / geographical turns*. London: Routledge, pp.359-369.

Simkin E., 2001. Vaccine developed for livestock gas emissions.
http://www.abc.net.au/pm/s309733.htm
Last accessed 28 November 2003.

Sinclair A.R.E and Fryxell J.M., 1985. The sahel of Africa: ecology of a disaster. *Canadian Journal of Zoology*, 63:987-994.

Singer P., 1975. *Animal liberation: a new ethics for our treatment of animals*. New York: Random House.

Smith J.A., 2003. Beyond dominance and affection: living with rabbits in post-humanist households. *Society and Animals*, 11:181-197.

Smith N., 1990. *Uneven development. Nature, capital and the production of space*. Oxford: Blackwell Publishers.

Smith S., 2001. Doing qualitative research: from interpretation to action. In: Limb M and Dwyer C (eds.), *Qualitative methodologies for geographers. Issues and debates*. London: Arnold, pp.23-40.

Smuts B., 2003. Reflections. In: Armstrong S.J and Botzler R.G (eds.), *The animal ethics reader*. London: Routledge, pp.75-78.

Soil Association., 2005. Organic food: facts and figures.
http://www.soilassociation.org/web/sa/saweb.nsf/0/4032f112dIa4a17880256e92005365sec?OpenDocument
Last accessed 8 July 2005.

Spencer T and Whatmore S., 2001. Editorial. Bio-geographies: putting life back into the discipline. *Transactions of the Institute of British Geographers*, 26:139-141.

Stamp-Dawkins M., 2003. Animal minds and animal emotions. In: Armstrong S.J and Botzler R.G (eds.), *The animal ethics reader*. London: Routledge, pp.94-99.

Stassart P and Whatmore S., 2003. Metabolising risk: food scares and the un/re-making of Belgian beef. *Environment and Planning A*, 35:449-462.

Stull D.D and Broadway M.J., 2004. *Slaughterhouse Blues: The meat and poultry industry in North America*. London: Thomson Learning.

Sutherland W.J., 1996. *From individual behaviour to population ecology*. Oxford: Oxford University Press.

Sutton J.D., 1985. Digestion and absorption of energy substrates in the lactating cow. *Journal of Dairy Science*, 68:3376-3393.

Swan D and McCarthy J.C., 2003. Contesting animal rights on the internet. Discourse analysis of the social construction argument. *Journal of Language and Social Psychology*, 22:297-320.

Swanson J.C and Morrow-Tesch J., 2001. Cattle transport. Historical research and future perspectives. *Animal science*, 79:102-109.

The Economist Editorial., 2001. They're burning animals again. *The Economist*, 3 March, pp.17-18.

The European Agency for the Evaluation of Medicinal Products (EMEA)., 2003. Public bulletin on veterinary pharmacovigilance.
http://www.emea.eu.int/pdfs/vet/phvwp/035904em/pdf
Last accessed 5 November 2003.

The European Federation of Animal Health (FEDESA) 2002. *The marketing authorisation process for veterinary medicinal products in Europe: FEDESA's contribution.* Brussels: FEDESA.

Thorne L., 1998. Kangaroos: the non-issue. *Society and Animals*, 6:167-182.

Thrift N., 1996. *Spatial formations.* London: Sage Publications.

Thrift N., 1999. Steps to an ecology of place. In: Massey D, Allen J and Sarre P (eds.), *Human geography today.* Cambridge: Polity Press, pp.295-322.

Thrift N., 2000a. Afterwords. *Environment and Planning D: Society and Space*, 18:213-255.

Thrift N., 2000b. Still life in nearly present time: the object of nature. *Body and Society*, 6:34-57.

Thrift N., 2000c. Entanglements of Power. Shadows? In: Sharp J.P, Routledge P, Philo C and Paddison R (eds.), *Entanglements of power. Geographies of domination/resistance.* London: Routledge, pp.269-278.

Thrift N., 2002. The future of geography. *Geoforum*, 33:291-298.

Thrift N., 2003a. Performance and... *Environment and Planning A*, 35:2019-2024.

Thrift N., 2003b. Still life in nearly present time: the object of nature. In: Cloke P (ed.), *Country visions.* Harlow: Pearson Education Limited, pp.308-331.

Thrift N., 2003c. Closer to the machine? Intelligent environments, new forms of possession and the rise of the supertoy. *Cultural Geographies*, 10:389-407.

Thrift N., 2004a. Intensities of feeling: towards a spatial politics of affect. *Geografiska Annaler B: Human Geography*, 86:57-78.

Thrift N., 2004b. Summoning Life. In: Cloke P, Crang P and Goodwin M (eds.), *Envisioning human geographies.* London: Arnold, pp.81-103.

Thrift N., 2004c. Remembering the technological unconsciousness by foregrounding knowledges of position. *Environment and Planning D: Society and Space*, 22:175-190.

Thrift N., 2004d. Performance and performativity: A geography of unknown lands. In: Duncan J.S, Johnson N.C and Schein R (eds.), *A companion to cultural geography.* Oxford: Blackwell Publishers, pp.121-135.

Thrift N and Dewsbury JD., 2000. Dead geographies – and how to make them live. *Environment and Planning D: Society and Space,* 18:411-432.

Tilman D, Fargione J, Wolff B, D'Antonio C, Dobson A, Howarth A, Schindler D, Schlesinger W.H, Simberloff D and Swackhamer D., 2001. Forecasting agriculturally driven global environmental change. *Science*, 292:281-284.

Tuan Y-F., 1984. *Dominance and affection: the making of pets.* London: Yale University Press.

Tweeten L., 1991. Public policy decisions for farm animal welfare. *The Journal of Agricultural and Environmental Ethics*, 6:87-104.

Uerpmann P., 1996. Animal domestication - accident or intention? In: Harris D (ed.), *The origins and spread of agriculture and pastoralism in Eurasia.* London: UCL Press, pp.227-237.

Underwood E.J and Suttle N.F., 1999. *The mineral nutrition of livestock.* Wallingford: CAB International.

Urpeth J., 2004. Animal becomings. In: Atterton P and Calarco M (eds.), *Animal philosophy. Ethics and identity: essential readings in continental philosophy.* London: Continuum, pp.87-100.

Vegetarian Society., 2005. General statistics information sheet.
http://www.vegsoc.org/info/statveg.html
Last accessed 8 July 2005.

Vernon R.G, Denis R.G.P and Sorensen A., 2001. Signals of adiposity. *Domestic Animal Endocrinology*, 21:197-214.

Von Uexküll J., 1956. A stroll through the worlds of animals and men: a picture book of invisible worlds. In: Schiller C.H (ed.), *Instinctive behaviour: the development of a modern concept.* New York: International Universities Press, pp.5-79.

Walton J.R., 1984. The diffusion of the improved shorthorn breed of cattle in Britain during the eighteenth and nineteenth centuries. *Transactions of the Institute of British Geographers*, 9:22-36.

Ward N, Clark J, Lowe P and Seymour S., 1998. Keeping matter in its place: pollution regulation and the reconfiguration of farmers and farming. *Environment and Planning A*, 30:1165-1178.

Warren A., 1995. The changing understandings of African pastoralism and the nature of environmental paradigms. *Transactions of the Institute of British Geographers*, 20:193-203.

Watson M., 2004. Performing place in nature reserves. *Sociological Review*, 52:145-160.

Wattiaux M.A., Undated. The reproductive function of dairy cattle.
http://babcock.cals.wisc.edu/de/html/ch8/reproductive_eng_ch8.html
Last accessed 19 November 2003.

Watts M., 1999. Commodities. In: Cloke P, Crang P and Goodwin M (eds.), *Introducing human geographies.* London: Arnold, pp.305-315.

Webb D.W., 1992. Artificial insemination in dairy cattle.
http://edis.ifas.ufl.edu/pdffiles/DS/DS08900.pdf
Last accessed 28 November 2003.

Webster J., 1995. *Animal welfare: A cool eye towards Eden.* Oxford: Blackwell Science.

Wechsler B., 2005. An authorization procedure for mass-produced farm animal housing systems with regard to animal welfare. *Livestock Production Science*, 94:71-79.

Weiss G., 1999. The duree of the techno-body. In: Grosz E (ed.), *Becomings. Explorations in time, memory and futures.* London: Cornell University Press, pp.161-175.

Wemelsfelder F., 1993. The concept of animal boredom and its relationship to stereotyped behaviour. In Lawrence A.B and Rushen J (eds.), *Stereotypic animal behaviour. Fundamentals and applications to welfare.* Wallingford: CAB International, pp.65-97.

Wemelsfelder F., 1997. The scientific validity of subjective concepts in models of animal behaviour. *Applied Animal Behaviour Science*, 53:75-88.

Wemelsfelder F., 2003. Lives of quiet desperation. In: Armstrong S.J and Botzler R.G (eds.), *The animal ethics reader.* London: Routledge, pp.199-200.

Wemelsfelder F, Hunter E.A, Mendl M.Y and Lawrence A.B., 2000. The spontaneous qualitative assessment of behavioural expressions in pigs: first explorations of a novel methodology for integrative animal welfare measurement. *Applied Animal Behaviour Research*, 67:193-215.

Wemelsfelder F and Lawrence A.B., 2001. Qualitative assessment of animal behaviour as an on-farm welfare monitoring tool. *Acta Agriculturae Scandinavica A: Animal Science*, 30:21-25.

Whatmore S., 1997. Dissecting the autonomous self: hybrid cartographies for a relational ethics. *Environment and Planning D: Society and Space*, 15:37-53.

Whatmore, S., 1999a. Hybrid geographies. Rethinking the 'human' in human geography. In: Massey D, Allen J and Sarre P (eds.), *Human geography today.* Cambridge: Polity Press, pp.22-41.

Whatmore S., 1999b. Culture-nature. In: Cloke P, Crang P and Goodwin M (eds.), *Introducing human geographies.* London: Arnold, pp.4-11.

Whatmore S., 2000a. Animals. In: Johnston R.J, Gregory D, Pratt G and Watts M (eds.), *The dictionary of human geography.* Oxford: Blackwell Publishers, pp.25-26

Whatmore S., 2000b. Heterogeneous geographies: Reimagining the spaces of N/nature. In: Cook I, Crouch D, Naylor S and Ryan J (eds.), *Cultural turns / geographical turns.* London: Pearson Education Limited, pp.265-272.

Whatmore S., 2002. *Hybrid geographies. Natures, cultures, spaces.* London: Sage Publications.

Whatmore S., 2003a. Introduction: more than human geographies. In: Anderson K, Domosh M, Pile S and Thrift N (eds.), *Handbook of cultural geography.* London: Sage Publications, pp.165-167.

Whatmore S., 2003b. Editorial: from banana wars to Black Sigatoka. Another case for a more-than-human geography. *Geoforum*, 34:139.

Whatmore S., 2003c. Generating materials. In: Pryke M, Rose G and Whatmore S (eds.), *Using social theory. Thinking through research.* London: Sage Publications, pp.89-104.

Whatmore S., 2004. Humanism's excess: some thoughts on the 'post-human/ist' agenda. *Environment and Planning A*, 36:1360-1363.

Whatmore, S., undated. Living Cities.
http://www.open.ac.uk/geog
Last accessed 5 November 2003.

Whatmore S and Boucher S., 1993. Bargaining with nature: the discourse and practice of 'environmental planning gain'. *Transaction of the Institute of British Geographers*, 18:166-178.

Whatmore S and Hinchliffe S., 2003a. Living cities: making space for urban nature. *Soundings*, 22:137-150.

Whatmore S and Hinchliffe S., 2003b. *Living Cities: towards a politics of conviviality.* Paper presented at 'Technonatures: environments, technologies and spaces in the twenty-first century' conference. Goldsmiths College, University of London, June 2003.

Whatmore S, Stassart P and Renting H., 2003. Guest editorial: what's alternative about alternative food networks? *Environment and Planning A*, 35:389-391.

Whatmore S and Thorne L., 1997. Nourishing networks. Alternative geographies of food. In: Goodman D and Watts M.J (eds.), *Globalising food. Agrarian questions and global restructuring.* London: Routledge, pp.287-304.

Whatmore S and Thorne L., 1998. Wild(er)ness: reconfiguring the geographies of wildlife. *Transactions of the Institute of British Geographers*, 23:435-454.

Whatmore S and Thorne L., 2000. Elephants on the move: spatial formations of wildlife exchange. *Environment and Planning D: Society and Space*, 18:185-203.

Widdowfield R., 2000. The place of emotions in academic research. *Area*, 32:199-208.

Wilbert C., 2000. Against this–Against-that. Resistances along a human-non-human axis. In: Sharp J.P, Routldege C, Philo C and Paddison R (eds.), *Entanglements of power. Geographies of domination/resistance.* London: Routledge, pp.238-255.

Wilkie R., 2005. Sentient commodities and productive paradoxes: the ambiguous nature of human-livestock relations in Northeast Scotland. *Journal of Rural Studies*, 21:213-230.

Willems-Braun B., 1997. Buried epistemologies: the politics of nature in (post)colonial British Columbia. *Annals of the Association of American Geographers*, 87:3-31.

Williams D., 2000. The right horse, the animal eye: Bartabas and Théâtre Zingaro. *Performance Research*, 5:35-36.

Wilton R.D., 1998. The constitution of difference: space and psyche in landscapes of exclusion. *Geoforum*, 29:173-185.

Winter M., 2003. Geographies of food: agro-food geographies – making reconnections. *Progress in Human Geography,* 27:505-513.

Winter M., 2004. Geographies of food: agro-food geographies – farming, food and politics. *Progress in Human Geography*, 28:664-670.

Winterhalder B., 2001. The behavioural ecology of hunter-gatherers. In: Panter-Brick C, Layton R.H and Rowley-Conwy P (eds.), *Hunter-gatherers. An interdisciplinary perspective.* Cambridge: Cambridge University Press, pp.12-38.

Wise S.M., 2000. *Rattling the cage. Towards legal rights for animals.* London: Profile Books Limited.

Wolch J., 2002a. Anima urbis. *Progress in Human Geography*, 26:721-742.

Wolch J., 2002b. Zoopolis. In: Dear M.J and Flusty S (eds.), *The spaces of postmodernity. Readings in human geography.* Oxford: Blackwell Publishers, pp.200-208.

Wolch J and Emel J., 1995. Guest editorial: bringing the animals back in. *Environment and Planning D: Society and Space*, 13:632-636.

Wolch J and Emel J., 1998. Witnessing the animal moment. In: Wolch J and Emel J (eds.), *Animal geographies. Place, politics, and identity in the nature-culture borderlands*. London: Verso, pp.1-27.

Wolch J, Gullo A and Lassiter U., 1997. Attitudes towards Californian cougars. *Society and Animals*, 5: unpaginated.

Wolch J, West K and Gaines T., 1995. Transspecies urban theory. *Environment and Planning D: Society and Space*, 13:735-760.

Wolfe C., 1998. *Critical environments. Postmodern theory and the pragmatics of "outside"*. London: University of Minnesota Press.

Wolfe C., 2003a. *Animal rites. American culture, the discourse of the species and posthumanist theory*. London: The University of Chicago Press.

Wolfe C., 2003b. Introduction. In: Wolfe C (ed.), *Zoontologies. The question of the animal*. London: University of Minnesota Press, pp.ix-xxiii.

Woods M., 1998. Mad cows and hounded deer: political representations of animals in the British countryside. *Environment and Planning A*, 30:1219-1234.

World Society for the Protection of Animals (WSPA)., 2003a. Veterinary syllabus on animal welfare. http://www.wspa.org.uk/index.php?page=877
Last accessed 29 November 2003.

World Society for the Protection of Animals (WSPA)., 2003b. Culture without Cruelty. http://www.wspa.org.uk/index.php?page=39
Last accessed 29 November 2003.

Wylie J., 2003. Landscape, performance and dwelling: a Glastonbury case study. In: Cloke P (ed.), *Country visions*. Harlow: Pearson Education Limited, pp.136-157.

Yarwood R and Evans N., 1998. New spaces for "old spots": The changing geographies of domestic livestock animals. *Society and Animals*, 6:137-165.

Yarwood R and Evans N., 1999. The changing geography of rare livestock breeds in Britain. *Geography*, 84:80-91.

Yarwood R and Evans N., 2000. Taking stock of farm animals and rurality. In: Philo C and Wilbert C (eds.), *Animal spaces, beastly places. New geographies of human-animal relations*. London: Routledge, pp.98-114.

Zeuner F.E., 1963. *A history of domesticated animals*. London: Hutchinson.

APPENDICES

9.55

Animal behaviour recording sheet

Animal species . Rhinoceros. Iguana..... No. of adults 2..... No. of young .....

date Monday 6th August **weather** Showers outside **observer** Jessica Sellick

start time 9 55 10 15	locomotion					still					feeding			groom	where	comments
	walk	run	climb	court		sit alert	rest	stand	bask		eat	forage			location	
0							✓✓								Nest	
1																
2	✓✓														"	
3																
4							✓F		✓M						"	Male, under heater eyes closed female, eyes open
5																
6	✓F								✓M						"	Female walks in front of male shes now directly under heat.
7																
8									✓✓						"	Both under heater
9																
10									✓✓						"	" " "
11																
12									✓✓						"	" " "
13																
14									✓✓						"	" " "
15																
16									✓✓						"	" " "
17																
18									✓✓						"	" " "
19																
20									✓✓						"	" " "
Total																

Notes 9 00 - 9 55 male and female both lying on nest, although not under heater. male lying behind female. female has eyes open.

Animal behaviour recording sheet

Animal species ..... No. of adults ..... No. of young .....

date Monday 6th August	**weather** Rain stopped More light shinning through windows														**observer**	
	locomotion					**still**					**feeding**				**where**	
start time 10-15 10-35	walk	run	climb	court		sit alert	rest	stand	bask		eat	forage		groom	location	**comments**
0																
1						✓m			✓f						Nest	
2	✓m					✓f									"	male moving towards radiator female alert + watching male
3	✓m								✓f						"	male walking towards door female very alert
4	✓m								✓f						" male at door	male = opening + closing mouth + licking lips
5	✓f							✓m							" "	female walks to edge of nest towards male.
6	✓f							✓m							" "	
7	✓f							✓m							" "	
8	✓f							✓m							Door	female moves over to join male shes looking around enclosure
9								✓✓							"	
10								✓✓							"	
11								✓✓							"	
12								✓✓							"	
13								✓✓							"	
14								✓✓							"	
15								✓✓			✓f				"	female eating yesterdays food male yawning
16								✓✓							"	
17	✓f							✓m							"	male = licking lips female turns back towards door to watch male
18	✓m								✓f						under branches	female looking around
19						✓✓									" "	
20	✓f					✓m									f = rocks	by window female's found more food from yesterday male follows he up reach shortly afterwards
Total																

Notes

Appendix II

ESRC Application Form: Proposed Research

A	N	I	M	A	L		G	E	O	G	R	A	P	H	I	E	S		T	N		D	A	J	R	Y			
E	A	R	M	I	N	G			T	H	E		L	I	F	E		C	Y	C	L	O		F	L	A	G	E	S
O	F		G	O	W	S																							

Please give a description of your proposed research topic including the questions or hypotheses to be addressed, the methods to be used, the sources to be consulted and brief timetable covering the period of study indicated in Question 7. If you intend to undertake any period of fieldwork overseas you should include details of what th will entail and how it fits into the timetable for your period of study. Please mention how you expect your research to be useful, and to whom. This Question accounts fi about 30% of the total marks allocated to the application so you should aim to use fully the pages provided. Do not attach additional material as this will be discarde You are strongly advised to refer to Section 5 and Annex 1 of the *'ESRC Postgraduate Research Studentships: Guidance Notes for Applicants 2001'*.

Themes (see paragraph 5.33 and Annex 1 paragraphs 11 and 12 of the Guidance Notes)

You should note that the ESRC intends to allocate a minimum of 60% of its Research studentships in 2001 to projects that are within the ESRC's theme areas, whilst st continuing to support good applications in other areas. Your proposed research topic must either make a case for relevance to one particular theme (or a maximum o two) or should clearly state that it is 'non-thematic'.

Research Ethics and confidentiality
(See paragraphs 5.35 to 5.39 of the Guidance Notes)

Are there particular ethical considerations which arise in the design or conduct of the proposed research? Please tick appropriate box. Yes [✓] No [ ]

If you have answered yes above, please address this explicitly in the description of your proposed research topic.

DESCRIPTION OF RESEARCH TOPIC

Introduction

This research will investigate aspects of nature-society relations by developing animal geographies of cows within the contemporary dairying industry. Three interconnecting themes form the basis of the proposal: aspects of non-human and relational agency; animal welfare and the ethics of human-animal relations; and, tying it all together, the importance of material and symbolic place(s) in understanding these agencies and relations. Place-chains in the life of dairy cows will be undertaken in the UK and Sweden, where different regulatory and ethical regimes occur.

Research Context

As human beings we are all dependent on animals to sustain our human existence (Philo & Wilbert 2000). In acknowledging this there has, however, been a tendency to overlook nonhuman 'living things' (Philo 1995) as part of efforts to explain how we are different from animals (Anderson 1997 see also Benton 1994). Bingham (1996) argues that this has led to a world that has been purified into a set of dualisms, 'Nature' and 'Society', 'Human' and 'Nonhuman'. Latour (1993) describes these separations as an "illusion", and now an increasing number of geographical writers are attempting to deconstruct these dualisms (see Davis 1999; Thrift, 1999; Whatmore, 1999). The 'Human' and 'Nonhuman' divide is increasingly being problematised (Cloke and Jones 2001a; Plumwood 1993) and the study of animals is being brought into the 'Society' framework from which it has long been excluded (Anderson 1997).

This turn to animals has recently been registered in geography with 'Animal Geographies' being integrated into human geography. While there has been much work on the role of animals in the home and the urban environment (see Wolch & Emel 1995) there is still much research to be done on the rural environment. Yarwood & Evans (2000 cited in Philo & Wilbert) explain how livestock for example have been studied in an economistic manner and are regarded as 'units of production'. They question whether livestock can contribute to local landscape distinctiveness and have looked at the ways in which animals are 'placed' by humans in their local material spaces including fields and factories. They argue that in order to reduce the anthropocentric human-animal divide in geography, livestock need to be studied beyond productivism as part of attempts to recognise the ways in which animals are not passive surfaces but figure in local practices (Philo & Wilbert 2000).

This is part of a larger aim of animal geography that looks towards extending the ethical community from its narrow anthropocentric base to a form where animals are somehow incorporated (Wolch & Emel 1995) and "there is arguably no more important set of issues for geographers to address today than that dealing with the complex and contested matters of ethics"(Proctor 1998:14-15). For Lynn (1998) animals are not commodities but members of our extended ethical community with whom we share geographic environments with.. Despite an increasing number of publications in this area, the need to adopt a more systematic approach has been emphasised (Proctor 1998). Whatmore (1997) for example looks at the ethical connections between people, cows and places arguing that food bridges the gap between binary positions such as 'Nature' and 'Society' (see also Haraway & Harvey 1995). Food is the mediator of hybrid communities as the harnessing of biotechnology becomes commonplace. The next generation of farm animals have been dubbed 'cloned cattle' (Anderson 1997)and Davis (1999) believes that the circulation of quasi-objects from this harnessing offers an alternative way of attributing agency to nonhuman actors.

Anthropocentrism is embedded in virtually all legislation regarding animals (Lynn 1998). Animals are only given 'extrinsic value' and are seen as a means to human ends (Proctor 1998). In the U.K. the welfare of farm animals is administered by the 'Farm Animal Welfare Council' (FAWC). This adopts a food chain approach to animal welfare, that is, the conditions that the animals are kept in need to be monitored to ensure the quality of the products that these animals will produce (FAWC 2000). Much of the recent legislation has focused on animal welfare during transport to markets and abattoirs. Some scientists (see Stookey 1994) suggest that the key to understanding acceptable levels of animal welfare lies in understanding the animals viewpoint and feelings about the conditions in which it lives. Sweden has been described as having "Europe's most stringent animal welfare rules" (Karacs 2001:6) There, the 1988 Animal Act and its

·quent revisions set an example of animal welfare that it wants the rest of Europe to adopt. While intensive production does take e it is not on the scale of the 'animal factories' found in the U.K and throughout Europe (Karacs 2001).

Aims and Objectives

In this Ph.D. proposal I focus my analysis on cows. While cows have figured prominently in agricultural geography and in the background of rural geography this has only been in so far as they are utilised by humans (Philo 1995). Cows have, until very recently, been neglected because they were deemed abundant (Jones 2000). However, the BSE crisis and the more recent Foot and Mouth outbreak have placed cows at the centre of these crises, arguably as "innocent victims". Woods (1998) describes how the 'object' of the debate (cows) are always on human terms. Their centrality to the debate brings with it neither power or voice as Woods describes anima as perhaps the "ultimate neglected rural other" (1998:1234). The broad aim of my research is to contribute towards breaking down anthropocentric human-animal divide.

More specifically I aim to explore three principal research questions.

1. How do socio-cultural constructions of cows relate to the spaces and places of cows in society?

By generating a 'cultural map' of the way in which cows are socially constructed (see Cloke and Jones, 2001a; 2001b, for such mapping i relation to trees), I will interpret the ways in which these constructs are more or less present in any particular emplaced encounter between humans and cows, and may be the source of disjuncture and contestation as differing constructions encounter different cow-related agency in particular arenas, including differently regulated arenas. I will deploy a typology of emplaced cow-human encounters, representing the spatial settling out of these cultural constructions and the co-constitution of places by cows. The typology will follow th places inhabited by particular cows throughout their lives, and will include processes of: Design (in the laboratory), Birth, Grazing, Milking, Transport, Market, Showing, Death, Processing, Selling and Consumption.

2. Can cows be seen as playing a role as creative agents within relational networks, and how does this relate to issues of place and emplaced ethical relations?

The spatialities of human-animal relations are not just the result of social constructions on the inert bodies of animals. Animals clearly 'push back the other way'. Actant Network Theory, as synthesised by Fitzsimmons and Goodman (1998), Harvey (1996), Thrift (1996, 1999) and Whatmore (1999), provides a framework in which animals and technologies can be considered as significant actants within relational agency (Little, 1999). If as Whatmore (1999: 26) suggests, agency should be seen as "a relational achievement, involving the creative presence of organic beings, technological devices and discursive codes", what is the nature of that 'creativity' which, in this case, cows bring to the relational process?

3. To what extent can the complex and messy fabric of emplaced everyday encounters between humans and cows be fed into theoretica debates about ethics and human-animal ethical relations?

Jones (2000) has argued that human-animal relations form a distinct pattern of spatial ethical relations. Animals have thus far been largely excluded from the ethical community and are classified and acted upon in all manner of spatial formations which carry differing (un)ethical weightings. There is, therefore, a need to confront the differentiated ethical 'freights' which come with these spaces of human animal encounters. The research will unpack how ethical imaginations are embedded in broad cultural constructions, and also (re)articulated in the differing practices of differing conceptual and material spaces of specific cow-human encounters (Proctor, 1998). I will explore non-anthropocentric ethics (Lynn, 1998) and the case for including animals in the ethical community. It will also look at the implications of hybrids such as 'cloned' cattle (Anderson, 1997; Haraway and Harvey, 1995).

Methodology

The proposed methodology involves three phases of research

Phase 1: analysis of a range of textual sources (eg specialist publications; websites; media coverage) to generate a cultural cartography of the social construction of cows. I will also undertake a range of contextual interviews to establish an appropriate typology with which to study the different places of cow-human encounters in a cow's life-cycle. These interviews will involve experts from the science, farming processing and food industries, as well as from animal welfare organisations.

Phase 2: construction of life histories of cows in the setting of the intensive UK dairy industry. By a process of interviews with key actors, and observation, (and where appropriate, digital video representation) of cows in key places, I will investigate the places inhabited by cows during their lives. These will include: laboratories, farms, markets, agricultural shows, markets, abattoirs, processing factories, and wholesale and retail facilities. I will also investigate movements between these places. A principal focus will be to investigate how cows co-constitute these places, and how relational agency therein is regulated in terms of welfare and ethics.

Phase 3: a repeat of Phase 2 in the different setting of Sweden, where stringent animal welfare rules apply. Phases 2 and 3 will therefore involve a significant programme of intensive research. At each place identified in Phase 2, it is envisaged that at least a week-long period of observation will be undertaken at each place, with longer periods necessitated in multi-process sites such as the farm. In-depth interviews will be carried out in each place with the people most closely concerned with human-cow encounters therein. This pattern wil be repeated in Phase 3. It is envisaged that in total, at least 60 interviews and 6 months' on-site observation will be required in Phases 2 and 3.

Access and Ethics

This work will be carried out in collaboration with the Division of Animal Health and Husbandry in the University of Bristol (Head: Professor John Webster), which can provide guaranteed access to 17 different dairy herds in the S W of England for research purposes, and which has well-established links with the Agricultural Science Departments in Uppsala in Sweden. Perhaps the most sensitive access issues relate to laboratories, but there too, the above collaboration offers clear paths of access on a basis of confidential anonymity.

-ry, ethical considerations are woven throughout this research, and I will be guided by the established ethical codes laid down by the versity's Department of Clinical Veterinary Science in relation to research on these issues.

Relevance

This proposal can be integrated into more than one of the ESRC's Thematic Priorities. However, it is most directly related to 'Environment and Human Behaviour' because of its concern with the relationship between the human and nonhuman components that make up the environment. It is also linked with 'Knowledge, Communication and Learning' because it seeks to readdress how some forms of human knowledge are considered to be privileged. The technological dimension of the proposal fits in with the cross council working on issues regarding biotechnology with the BBSRC. The findings of the research will be relevant to a range of end-users, including the dairy industry, animal welfare groups, and UK and EU farm and animal regulators.

Timetable

Year 1: October 2001-September 2002

- Research training in animal genetics, video methods and Swedish language.
- Review of literature and textual sources (Phase 1).
- Contextual interviews (Phase 1).
- Initial fieldtrip to Sweden (6 weeks) to establish further contacts, finalise cow places, and conduct preliminary interviews.
- Preparation for UK fieldwork. This will include accessing contacts already made with Dr.W.Lynn (Associate for Ethics, Nature and Society, Hastings Centre), Mrs Bravin (Dairy farmer willing to participate in the research) plus other contacts made with staff working in laboratories.

Year 2: October 2002-September 2003

- Carry out UK and Swedish fieldwork.
- Analyse results.

Year 3: October 2003-September 2004

- Complete analysis and write thesis.

References

Anderson K 1997 "A walk on the wild side: A critical Geography of domestication" *Progress in Human Geography* 21(4):463-485.

Benton T 1994 "Biology and Social Theory" *Social Theory and the Environment* Eds. T Benton & M Redclift London: Routledge pp.28-49.

Bingham N 1996 "Object-ions:from technological determinism towards geographies of relations" *Environment and Planning D: Society and Space* 14:635-657.

Cloke P and Jones O (2001). Tree Cultures Berg, Oxford (forthcoming)

Cloke P and Jones O (2001). Dwelling, place and landscape: an orchard in Somerset. Environment and Planning A (forthcoming).

Davis G 1999 "Exploiting the archive:and the animals came in two by two, 16mm, CD-ROM and BataSp" *Area* 31(1):49-58.

Fitzimmons M and Goodman D (1998). 'Incorporating nature: environmental narratives and the reproduction of food". In Braun B. and Castree N (eds). Remaking Reality: Nature At The Millennium Routledge, London.

Harvey D (1996). Justice, Nature And The Geography of Difference. Blackwell, Oxford.

Harvey D & Haraway D 1995 "Nature, Politics, and Possibilities: a debate and discussion with Donna Haraway and David Harvey *Environment and Planning D: Society and Space* 13:507-527.

Jones O 2000 "(un)ethical geographies of human-non-human relations: encounters, collectives and spaces" *Animal Spaces, Beastly Places. New geographies of human-animal relations* Eds. C Philo & C Wilbert London: Routledge pp.268-292.

Karacs 2001 "Success for nation that rejected modern farming" *The Indepemdemt* 12th March page 6.

Latour B 1993 *We Have Never Been Modern* Brighton: Harvester Wheatsheaf.

Little J 1999 "Otherness, representation and the cultural construction of rurality" *Progress in Human Geography* 23(3):437-442.

Lynn B 1998 "Animals, Ethics, and Geography" *Animal Geographies. Place, Politics and Identity in the Nature-Culture Borderlands* Eds. J Wolch & J Emel.

Philo C 1995 "Animals, geography and the city: notes on inclusions and exclusions" *Environment and Planning D: Society and Space* 13:655-681.

Philo C & Wilbert C 2000 *Animal Spaces, Beastly Places. New geographies of human-animal relations* London: Routledge.

Proctor JD 1998 "Ethics in geography: giving moral form to the geographical imagination" *Area* 31(1):8-18.

Stookey J 1994 "Is Dairy production compatible with Animal Welfare?" *Advances in Dairy Technology* 6:209-219.

Whatmore S 1997 "Dissecting the autonomous self: hybrid cartographies for a relational ethics" *Environment and Planning D: Society and Space* 15:37-53.

Whatmore S (1999). 'Rethinking the 'human' in 'human geography'. In Massey D et al (eds). Human Geography Today. Polity, Oxford.

Thrift N (1996). Spatial Foundations. Sage, London.

Thrift N (1999). 'Steps to an ecology of place'. In Massey D et al (eds). Human Geography Today. Polity, Oxford.

Wolch J & Emel J 1998 *Animal Geographies: Places, Politics and Identity in the Nature-Culture Borderlands* London: Verso.

Wolch J & Emel J 1995 "Guest editorial: Bringing the animals back in" *Environment and Planning D: Society and Space* 13:632-636.

Woods M 1998 "Mad cows and Hounded deer: Political representations of animals in the British countryside" *Environment and Planning D: Society and Space* 30:1219-1234.

Yarwood R & Evans N 2000 "Taking stock of farm animals and rurality" *Animal Spaces, Beastly Places New geographies of human-animal relations* Eds. C Philo & C Wilbert London: Routledge pp.98-115.

Appendix III

Overview of organization and company participation

Please note: in accordance with the Data Protection Act 1998 individuals and organizations that have participated in this project have been guaranteed anonymity and are to remain unidentifiable at all stages of the research.

A Government Department responsible for Agriculture

Office 1: This division is responsible for disease surveillance (providing information on notifiable diseases and zoonoses) and disease control (veterinary surveillance, endemic disease surveillance, monitoring European and international disease outbreaks). In response to the 2001 outbreak of Foot and Mouth Disease (FMD) in the United Kingdom (U.K), this unit was established to produce a new set of biosecurity guidelines. The project that I followed within this unit was concerned with improving the reporting of notifiable diseases by farm animal keepers and rationalizing existing compensation regimes. After meeting two civil servants I made a total of six trips to London over a one year period to trace this project from conception to the publication of a consultation document. It is anticipated that responses to the consultation document and recommendations to government ministers will be made in 2005 or 2006.

Office 2: This division is responsible for ensuring the safety, quality and efficacy of all aspects of veterinary medicines in the U.K. The division is divided into three main areas:

1. Licensing: the assessment of applications from pharmaceutical and food companies, issuing and maintenance of Marketing Authorisations, pharmacovigilance; and the inspection of manufacturers and wholesale dealers.
2. Residues: surveillance of residues, taking action on banned substances in farm animal products and imported animal products.
3. Policy: to develop and implement new legislation on all aspects of veterinary medicines; to provide support to government Ministers through briefings and replies to parliamentary questions.

To understand the ways in which cattle drugs are licensed and monitored in the U.K I attended a two day training programme intended to provide veterinarians from non-EU member states with an overview of the U.K regulatory process. I made further visits to this office to interview twelve members of staff involved in assessing dossiers submitted by pharmaceutical and food companies (please note dossiers have four parts: administrative requirements, quality, safety and efficacy):

1. Licensing. A total of eight interviews were conducted with staff in the licensing, immunological, feed additives and veterinary assessment teams.
2. Residues. Two interviews were conducted with staff in the environmental assessment team.
3. Policy. Two interviews were conducted with staff in the business and policy team.

I also made two further visits to this office. On one occasion I spent a morning in the basement with an administrative team trawling through dossiers submitted by pharmaceutical companies. On my second visit, I spent the afternoon with a member of the pharmacovigilance team, following how an online scheme set up to monitor suspected adverse drug reactions is administered.

Office 3: This is an enforcement agency that acts on behalf of offices 2 and 3. This division carries out investigations into medicinal and zootechnical residues in animal foodstuffs; examines the contamination of feedingstuffs; and inspects the merchants, saddlers, manufacturers and intermediaries whom manufacture, store and sell these products. I interviewed a member of the inspection team and spent a day with him as he carried out inspections at a wholesaler.

Office 4: A medicines agency that is a decentralized body of the European Union. The agency works as a network to bring together the scientific resources of Member States to evaluate and supervise veterinary medicines in Europe. Since 1 January 1995 there have been two systems in operation to facilitate the authorization of veterinary medicines within the European Union. Firstly, the

'centralized' route: drug applications submitted through this route, if successful, are licensed for use in all member states. Secondly, the 'decentralized' route: where applications are submitted within a single member state and national procedures are followed which, if successful, means that this drug may only be used within the one state specified. This unit assesses centralised applications, arbitrates on decentralized applications, and co-ordinates pharmacovigilance across Europe. To understand the European regulatory process I interviewed an assistant in the communications and networking unit.

Office ***5:*** This division is responsible for maintaining a register of births, deaths and imports of cattle to use for animal health and subsidy control purposes; issuing cattle passports and recording where individual cattle are; and operating a helpline and providing online facilities to deliver these services. I spent two days at this office following the tracing scheme. In total seven interviews were conducted with staff in the data registration, operations, deregistration and corporate project teams. I also spent time informally with staff in the postal room, at the call centre, and in the 'deregistration warehouse'.

Office ***6:*** This division inspects milking premises, equipment and milk producing animals to ensure compliance with dairy hygiene regulations. I interviewed a hygiene inspector about legislation and on-farm practices and, in a follow-up appointment, followed him as he visited farms and completed assessment reports.

Office ***7:*** This division investigates accidents and complaints on agricultural premises, conducting onsite inspections (announced and unannounced), providing guidance and support on safety, imposing enforcements and taking legal action when necessary. I interviewed an inspector regarding legislation on the preparation of animals for slaughter and the safety of slaughterhouse employees.

A. *Dairy hygiene equipment company.* This company supplies equipment for the prevention and detection of mastitis in dairy cattle. The business works with academics, animal health institutes and other bodies researching the causes, effects and treatment of this ailment. I interviewed a business and development manager, two members of the research and development team, an engineer and a member of the product assembly team about the design, manufacture and assemblage of dairy hygiene products and the development of these products in relation to animal welfare, farming practices and legislation. I made a follow-up visit to the company's manufacturing facilities and observed milk sampler cups being manufactured, jetstreams being tested and sampler cups packaged in the warehouse.

B. *Fibreglass company.* This company develops and installs reinforced wallcoating systems. I interviewed one of the general managers at the company about the use of fibreglass in the agricultural industry and the design and development of feed troughs. Furthermore, I was also invited to spend a day at this company, watching a mould for a trough being manufactured.

C. *Milking parlour and automated software design company.* This company designs, manufactures and supplies milking machine and milk storage equipment. I interviewed a research and development manager about dairy parlour design and the manufacture and installation of robotic milking systems. Moreover, I was able to spend a day at the company's U.K manufacturing site watching components for robotic milking equipment being assembled.

D. *An engineering company.* This company manufactures a range of agricultural products for cattle. These include: crushes, feeders, calf dehorners, cubicles and handling equipment. I interviewed two members of the research and development team to find out about the technical design and manufacture of crushes and issues relating to animal welfare, farming practices and legislation.

E. *An engineering company.* This company specializes in steel-framed buildings and custom-made farm machinery. I interviewed a company director about the planning and design of portable cattle crushes and handling pens. At our meeting I was also able to look through technical design sheets and touch steel plates for the crusher floor.

F. *Dairy housing company.* This company manufactures and distributes cow stalls, mattresses, pillows and carpet. I interviewed a consultant about the role of bedding products in cubicle design, product installation and issues relating to animal welfare. Furthermore, I spent a day at a yard observing containers of mattresses and pillows being stored for distribution throughout the U.K.

G. *A pharmaceutical company.* An animal health company responsible for researching, developing, manufacturing and marketing products for the prevention and treatment of health problems in a variety of farm animals. Cattle products include: mastitis control, vaccines, anitparasitics, antimicrobials and fertility management. I interviewed a research and development manager, a project manager preparing to submit a dossier on a cattle product to European regulatory authorities, and a member of the quality assurance team. I also spent half a day touring the company's research facilities, this included an on-site farm and clinical laboratories.

H. *A pharmaceutical company.* This company develops, manufactures and markets more than seventy medicinal products for beef and dairy cattle. These include: vaccines, parasite-control products and antibiotics to treat respiratory diseases, mastitis and udder infections, clostridia diseases and lameness. I was able to interview a research and development manager about the design, development and manufacture of veterinary products. Furthermore, I was able to tour the laboratories and observe a member of staff assembling diagnostic kits.

I. *A Pharmaceutical company.* This company markets veterinary medicines, animal health products and leather care products. I interviewed a member of the quality assurance team about the manufacture of veterinary medicines, the use of medicines on farms, and policy and legislation.

J. *A pharmaceutical company.* This company is a supplier of feed ingredients and finished products. I interviewed the business affairs manager about the use of pharmaceutical products in beef and dairy cattle, animal welfare and issues relating to policy and legislation.

K. *A pharmaceutical company.* This organization aims to provide all sectors of the animal health industry with animal disease surveillance, diagnostic services and scientific research. I interviewed a laboratory supervisor about testing programmes, public-private collaborative work, animal welfare, public health and current and future research programmes. In addition I was able to tour the company's laboratories, observing experiments, the homogenisation of samples and computer programming of technical data.

L. *A body representing the pharmaceutical industry.* This group acts as a consultative body to industry, the government, the media and the general public. I interviewed a member of the communications team about the role of animal medicines, scientific innovation, animal welfare and legislation.

M. *A body encouraging the responsible use of medicines in farm animals.* This organization represents companies involved at every stage of the food chain. In particular, members advocate a co-ordinated and integrated approach to best practices in the use of medicines in farm animals; and promote the highest standards of food safety, animal health, and animal welfare in British farming. Specifically, the organization formulates guidelines for the use of medicinal products in dairy and beef cattle. These guidelines provide advice on drug application, the responsibilities of the farmer and the veterinary surgeon, and strategies for reduced usage of drugs. I interviewed the chief executive and an animal health advisor about the pharmaceutical industry in the U.K, legislation, and animal welfare.

N. *A body representing the animal medicines industry.* This is an independent regulatory body whose task it is to ensure that the marketing and distribution of animal medicines in the U.K is undertaken by qualified professionals. I interviewed the secretary of the organization about the distribution of veterinary medicines in the U.K and Europe; and the design, validation and certification of training courses.

O. *A body representing the agricultural industry.* This body was created to promote the benefits of commercial agriculture in the U.K and to support collaboration throughout the food chain. The organization represents U.K animal feed companies, fertiliser producers and distributors of crop protection products. I interviewed the membership officer about animal feed materials, feed assurance schemes, labelling and trade issues.

P. *A farm homeopathic products company.* This business specializes in homeopathic treatments for animals. I interviewed the founder of the company and a homoeopath about the role of homeopathic treatments in farming, the information and skills provided to farmers so that they are able to diagnose and treat their own animals; cattle treatments and preventatives; and the role of legislation.

Q. *An animal welfare organization.* This research, information and campaigning organization campaigns for kinder farming (i.e., the non-exploitation of animals) and improved human health, nutrition and welfare. Specifically, the organization funds research into alternatives to the live/deadstock industry, produces scientific reports on farm animal welfare, and represents human consumers on matters relating to food labelling, marketing and ingredients. I interviewed a chemical scientist and research officer about farming animals for food, animal welfare campaigns and farming reforms. In addition, I conducted a survey with other members of the group on the availability of meat and dairy free products on supermarket shelves.

R. *An animal welfare organization.* This organization is involved in practical welfare, law enforcement, campaigning and education. The organization has a network of animal hospitals, specialist wildlife centres, animal centres and veterinary clinics. In addition, the organization employs animal collection officers and veterinary experts. I interviewed a member of staff in the dairy cow unit (science division) and an animal collection officer about the role of the science department, campaigning, research and the dissemination of technical information, and farm assurance and food labelling schemes.

S. *An animal welfare organization.* Although based in the U.K, this organization now operates at an international level. The group would like to end farming practices, technologies and trades which impose suffering on farm animals. In this way, the organization is involved in political lobbying, investigations that expose cruelty to farm animals, and high profile campaigns designed to achieve better standards and happier lives for farm animals everywhere. I interviewed a member of the campaigns team and a research officer about farm animal welfare issues, research, campaigning, education, and legislative frameworks.

T. *An animal rights group.* This non-profit organization was founded to oppose the cruelty of the battery cage system for laying hens. More recently the group have expanded their remit to investigate the conditions in which all farmed poultry, and other farm animals are kept. I interviewed a member of the organization about the history and role of the group; cattle welfare issues; systems of animal husbandry; veterinary medicines and campaigning.

U. *An animal rights group.* This non-profit organization is dedicated to campaigning against farming animals. Specifically, the group promotes a vegan lifestyle and funds a farm animal sanctuary. I interviewed a member of the organization about the origins and role of the group, membership and campaigning. In addition, I spent one day at a farm sanctuary with a group of volunteers.

V. *An animal rights group.* This non-profit organization campaigns against all forms of animal abuse and promotes a cruelty-free lifestyle. In particular, members investigate and expose animal cruelty, and use undercover investigations to access the media and bring these issues to public attention. I interviewed two members of the campaigns team about farm animal welfare, campaigning, monitoring and protesting, education and resources, and the group's future ambitions.

W. *An animal feed company.* This organization manufactures ruminant feeds. I interviewed a member of the cattle nutrition team, a business development manager, a feed scientist and feed mill manager

about cattle nutrition; cereal and by-product purchase; animal feed production and manufacture; feed assurance schemes; and relations with farmers, merchants, processors and retailers. Moreover, I spent one day at a feed mill watching seeds from Argentina arrive at the docks and tracing their journey through the mill.

X. *An agricultural polythene netting twine business.* This company markets silage stretch film. I spent one day at the company's distribution centre watching silage stretch film being moved, organized, loaded and sold; and interviewed a warehouse manager about polythene packaging products, manufacturing facilities, environmental and legislative requirements, and current and future farming needs.

Y. *A cattle breeding company.* This organization supply technology and services to agriculture and is comprised of three inter-related divisions: breeding, consulting, and distribution. The breeding business proves more than three hundred bulls a year in several countries. I interviewed a member of the cattle fertility team to learn more about the company's bull stud project, the development of an objective semen testing programme, and the future of reproductive and genetic technologies.

Z. *A genetic data centre.* This company calculates and disseminates cattle statistics with an emphasis on genetic evaluations. The organization estimates the predicted transmitting abilities (PTAs) of milk, fat and protein yield for the U.K dairy herd and produces production indices known as £PIN and £PLI. The company is also responsible for maintaining conversion formulae so that foreign cow and bull PTAs can be converted to UK PTA equivalents. Twice a year the company send herd genetic reports to milk recording organizations and farmers. Moreover, the company also supplies lists of the top bulls and cows according to breed; and produces summary statistic books containing genetic trends in the U.K cattle population. I interviewed a statistician at this organization about the role of genetic indices, data collection and calculation, dissemination, and current and future farming needs. In addition, I was able to spend an afternoon with this participant, following, in practice, how he used the information provided by milk recording organizations and breed societies to produce genetic evaluations for cattle.

8. *A university department for veterinary medicine.* I visited this department to speak with lecturers and research associates working on projects relating to the development of analytical techniques for modelling a cow's rumen, and the relationship between cattle nutrition and the regulation of milk production. Moreover, I was concerned with how these projects connect to issues surrounding welfare, edibility and palatability. I continue to have ongoing discussions with members of staff at this department.

9. *A university department for veterinary medicine.* I visited this department to speak with lecturers and research associates in the animal welfare unit. We discussed concepts of animal welfare, methods of study and legislation. I was provided with a tour of the school and able to observe clinical trials being conducted on a horse and foal. I continue to have ongoing discussions with members of staff at this unit.

10. *A breeding company.* This artificial insemination business aims to produce bulls with transmitting abilities that have reliable first crop proofs and fertile and healthier cows. I interviewed a cattle manager about breeding goals, trait evaluation and a sire match mating programme. Moreover, I was taken on a tour of the site where I was able to observe the processing of cattle semen and embryos in the laboratory.

11. *A rural business advisory consultancy.* This company offers management and business advice to farmers applying for government grants, participating in environmental schemes and submitting subsidy claims. I interviewed an advisor in the financial services team on the business challenges and financial pressures facing dairy farmers in the U.K.

12. *A construction company.* This business designs, manufactures and erects a range of steel framed buildings for farming, commercial and industrial use. Agricultural buildings include: cold stores,

grain stores, cattle sheds and dairy parlours. I interviewed a marketing manager about planning and designing buildings for farmers and animals, technical advice and specifications, and retail sales.

Appendix IV

Perceptual Practices

Observation Sites

Agricultural shows Seven shows attended over a two year period 2002-2004, three of these were with Margaret and other cows from Folly Farm.

Animal sanctuary run by animal rights group U (1 day), Saturday 24 May 2003.

Barn 1 day spent with three animal rights protesters and five chickens, Saturday 13 September 2003.

Cattle markets Eight visits (0.5 days each) to two markets over a six month period, April-November 2003: Wednesday 28 May, Thursday 19 June, Wednesday 24 September, Thursday 25 September, Tuesday 7 October, Thursday 9 October, Wednesday 29 October, Thursday 19 November.

Feed mill 1 day spent watching seeds from Argentina arrive at the docks and tracing their journey through the mill, feed company W, Monday 10 March 2003.

Folly Farm Between June 2002 and February 2003 I spent between one and four days each week at the farm, each visit lasting half a day or a whole day. Between March 2003 and November 2003 I spent one or two days each week at the farm, each visit lasting half a day. Since November 2003 I have continued to return to the farm (see part 3.31), visiting once or twice a month, each visit lasting up to three hours.

Industrial warehouses and offices of government department 5: administers the cattle tracing system. In the mail room sorting out post (0.5 days) and at the call centre (one hour), Monday 30 June 2003. Touring a warehouse containing cattle records (1.5 hours), Tuesday 1 July 2003.

Inspections Visits to two farms with a dairy hygiene inspector from government office 6 (0.5 days), Wednesday 18 June 2003. Visit with an inspector from government office 3 to an animal feed wholesaler (1 day), Friday 4 July 2003.

Laboratories At pharmaceutical company G I was able to watch members of staff carrying out clinical trials on small animals and analyzing culture and tissues samples in the lab (0.5 days), Wednesday 19 February 2003. At breeding company 10 I was able to observe the processing of cattle semen and embryos (0.5 days), Wednesday 7 May 2003. At pharmaceutical company H I was able to watch a member of staff assembling Brucella diagnostic kits (0.5 days), Friday 27 June 2003. At pharmaceutical company K I was able to observe serological testing, the homogenization of samples and programming of the automated immunostainer (0.5 days), Monday 4 August 2003.

Licensing regulatory training programme Attended a two day training programme in London organized by government office 2 designed to provide veterinarians from non-EU member states with an overview of U.K and E.U regulatory processes for veterinary medicines, Wednesday 4 - Thursday 5 June 2003.

Manufacturing sites At equipment company A I watched Kevin tooling a machine to make milk sampler cups (0.5 days) and jetstreams being tested and sampler cups being packaged by Sarah and her team (0.5 days), Tuesday 18 March 2003. At milking machine company C I monitored components for robotic milking equipment being assembled (1 day), Monday 12 May 2003. At equipment company B I was able to follow a mould for a feed trough being manufactured (1 day), Wednesday 14 May 2003.

Offices At breeding company Z I observed a statistician compiling genetic evaluations for cows and bulls in the U.K (0.5 days), Wednesday 30 April 2003. I spent 0.5 days in the basement at government office 2 flicking through dossiers submitted by pharmaceutical companies with two administrative assistants; and 0.5 days following how an online scheme to monitor adverse drug reactions is administered, Friday 8 August 2003. At government office 1 I made six trips (0.5 days each) over a seven month period, March – September 2003, to trace a public consultation exercise on animal disease: Friday 14 March, Tuesday 1 April, Thursday 22 May, Wednesday 16 July, Thursday 28 August and Monday 23 September.

Public demonstration against live animal exports at a port in the south of England (0.5 days), Saturday 5 April 2003.

Slaughterhouse Three visits made to one abattoir (0.5 days each): Friday 11 April 2003, Friday 18 July, and Wednesday 30 July 2003.

Street collection 0.5 days spent with volunteers from animal rights organization V collecting public donations to support a campaign to ban primate experiments, Monday 11 August 2003.

Supermarket A survey of meat and dairy free products available on store shelves, carried out with animal welfare group Q (1 hour), Tuesday 15 April 2003.

Veterinary departments A visit to a veterinary school in the south of England to discuss the nutrient requirements of cattle and issues relating to palatability and edibility (1 day), Monday 7 July 2003. A visit to a veterinary school in the north of England to observe clinical trials being conducted on horses (1 day), Tuesday 9 September 2003. Please note: my collaborative work with animal scientists is ongoing.

Warehouse Watching silage stretch film being moved, organized, loaded and sold, equipment company X (1 day), Monday 29 September 2003.

Yard At equipment company F I observed containers of mattresses and pillows being stored for distribution throughout the U.K (0.5 days), Friday 25 April 2003.

Objects traced through these sites:

Animal medicines record book
Cattle crushes
Cattle tracing system (passport and movement card)
Computer print outs of performance data and production traits for U.K cattle herds
Concentrate (feed, additives)
Cow mattress and pillow
Feed trough
Government department consultation document
Herd genetic report
Homeopathic treatments
Hygiene assessment report
Jetstream
Milk sampler cup
Parlour design (ventilation systems, wallcoatings, robotic milking equipment)
Pharmaceutical licence applications
Planning and dissemination of animal welfare and animal rights campaigns (public demonstrations, supermarket survey)
Silage stretch film
Vaccine
Weighing systems

Appendix V

Visual practices

Sites of production

Video recordings

Between 2002 and 2004 I took a Canon ZR200 digital camcorder to Folly Farm, not as part of a deliberate attempt to 'capture' events such as milking, feeding, sleeping; rather, I used the camera in unplanned and unintended ways. Approximately twenty five hours of material has been gathered of cattle in fields, in the shed, being loaded onto a lorry and receiving routine veterinary treatment.

Photography

Disposable cameras (Proimage nonflash camera) and a digital camera (Kodak C3304MP) were employed at the following sites:
Agricultural shows (11 films taken between May 2002 and December 2004)
Cattle markets (6 films taken between April and November 2003)
Feed mill (2 films taken on Monday 10 March 2003)
Folly Farm (approximately 70 films taken from May 2002 - present day)
Moulding a feed trough (3 films taken on Wednesday 14 May 2003)
Public demonstration against live animal exports (1 film taken on Saturday 5 April 2003).

Compositional modalities

The collection of these materials stem from my relationship with individual animals at Folly Farm. In this way, cattle contribute to an understanding of images through their compositional role (content, colour, texture and spatial organization) and according to the way in which they disturb and unsettle what is being gathered (nudging, phlegm, or modifying their behaviour in some way). It is these all too often instantaneous and unrehearsed practices of the animals themselves, then, which points towards the breaking down of hierarchical researcher/researched, human/animal relationships.

Appendix VI

Audio practices

Between 2002 and 2004 I took a tape recorder (Sony Pressman TCM-400DV handheld voice recorder and Sony WM-GX221 portable cassette player) to the following sites:

Agricultural shows	(May 2002 - December 2004: in the shed at public viewing times and at the beginning and end of the day; preparing a cow for a class).
Cattle markets	(April - November 2003: cattle pens and auction time)
Folly Farm	(2002-2004: cattle eating, milking time, waiting outside the parlour, in the shed, leaving the farm).

My recording of cattle sounds at these sites was not pre-planned, some recordings lasting a few minutes others more than two hours. In total, 9 hours of audio material was gathered.

Appendix VII

Textual Practices

Listed below are the titles of a range of materials from the farming press, the internet, policy documents and academic journals that I have read over the course of my doctoral research.
Please note: these publications are confined to agricultural and animal sciences and are intended to indicate where some of my understandings of animal welfare, biotechnology, feed science and pharmaceutical production derive from.

Academic Publications:

Agriculture and Human Values
Animal Behaviour
Animal Biotechnology
Animal Feed Science and Technology
Animal Science Journal
Applied Animal Behaviour Science
Food Biotechnology
Health, Risk and Society
Livestock Production Science
Nature Biotechnology
Reproduction in Domestic Animals
Journal of Agricultural and Environmental Ethics
Journal of Agricultural Science
Journal of Animal Science
Journal of Dairy Science
Journal of Veterinary Medicine Series A
Journal of Veterinary Medicine Series B
Trends in Biotechnology
The International Food and Agribusiness Management Review
Veterinary Journal
Veterinary Record

Non-academic Publications:

Dairy Farmer
Farmers Weekly

Online Publications:

Bioethics Today
Department for the Environment, Food and Rural Affairs consultation documents http://www.defra.gov.uk/

Appendix VIII

Talking Practices

Interview Participant List

Please note: this table is compiled in chronological order.

PARTICIPANT	COMPANY	JOB TITLE	DATE(S)
Simon	Pharmaceutical company G	Research and Development Team	19 February 2003
David	Pharmaceutical company G	Project Manager	19 February 2003
Bill	Pharmaceutical company G	Quality Assurance Team	19 February 2003
Stephen	Pharmaceutical company J	Business Affairs Team	25 February 2003
Nicholas	Equipment company F	Consultant	3 March 2003
Dean	Feed company W	Business and Development Team	6 March 2003
Anna	Feed company W	Cattle Nutrition Team	6 March 2003
George	Feed company W	Feed Mill Manager	10 March 2003
Timothy	Feed Company W	Feed Scientist	10 March 2003
Robin	Equipment company A	Business and Development Team	17 March 2003
Aled	Equipment company A	Research and Development Team	17 March 2003
Robert	Equipment company A	Research and Development Team	17 March 2003

Kevin	Equipment company A	Engineering Team	18 March 2003
Sarah	Equipment company A	Product Assembly Team	18 March 2003
Jon	Government office 1	Project Manager	14 March, 1 April, 22 May,16 July, 28 August, 22 September 2003
Christopher	Breeding company Y	Cattle Fertility Expert	7 April 2003
Andrew	Animal welfare organization Q	Chemical Scientist	15 April 2003
Carl	Animal welfare organization Q	Research Officer	15 April 2003
Philip	Animal welfare organization R	Dairy Cow Unit (Science Team)	23 April 2003
Laura	Animal welfare organization R	Animal Collection Team	23 April 2003
Gerald	Breeding and genetic evaluation company Z	Technical Team	30 April 2003
Caroline	Animal rights organization T	Founding member	1 May 2003
Ian	Breeding company 10	Cattle Manager	7 May 2003
Joe	Equipment company C	Product Manager	12 May 2003
Brian	Equipment company B	General Manager	13 May 2003
Tanya	Animal rights organization U	Founding member	20 May 2003
Henry	Equipment company D	Research and Development Team	29 May 2003

Charles	Equipment company D	Research and Development Team	29 May 2003
Norman	Equipment company X	Warehouse Manager	3 June 2003
Lucy	Pharmaceutical representation company L	Communications Team	10 June 2003
Joseph	Government office 6	Dairy Hygiene Team	11 June 2003
Miranda	Animal welfare organization S	Campaigns Team	16 June 2003
Hayley	Animal welfare organization S	Research and Information Team	16 June 2003
Thomas	Government office 3	Medicines and Feed Inspector	24 June 2003
Elliot	Pharmaceutical company H	Research Team	27 June 2003
Annie	Government office 5	Corporate Projects Team	30 June 2003
Jennifer	Government office 5	Data Registration Team	30 June 2003
Catherine	Government office 5	Passport Operations Team	30 June 2003
Marion	Government office 5	Call Centre	1 July 2003
Michael	Government office 5	Deregistration Team	1 July 2003
Cathy	Government office 5	Corporate Services Team	1 July 2003
Jessica	Government office 5	Business Development Team	1 July 2003

Jack	Pharmaceutical company P	Homeopathic Practitioner	2 July 2003
Andrea	Pharmaceutical company P	General Manager	2 July 2003
Sandra	Department of Veterinary Medicine, University 8	Feed Scientist	7 July 2003
Paul	Pharmaceutical representation company M	Animal Health Advisor	9 July 2003
Anthony	Pharmaceutical representation company M	Chief Executive	9 July 2003
Donald	Government office 2	Licensing Team	10 July 2003
Emily	Government office 2	Veterinary Assessment Team	14 July 2003
Jim	Government office 2	Immunological Assessment Team	14 July 2003
Nigel	Government office 2	Environmental Safety Team	15 July 2003
Malcolm	Government office 2	Marketing Authorisation Team	15 July 2003
Russell	Pharmaceutical company I	Quality Assurance Team	22 July 2003
Nick	Rural Services company 11	Marketing Manager	25 July 2003
Richard	Government office 2	Feed Additives Team	28 July 2003
Keith	Government office 2	Feed Additives Team	28 July 2003
Neil	Pharmaceutical company K	Laboratory Supervisor	4 August 2003

Shaun	Government office 2	Licensing and Policy Advisor	5 August 2003
Ken	Government office 2	Policy Business Team	5 August 2003
Selina	Government office 2	Scientific Officer	8 August 2003
Belinda	Animal rights organization V	Campaigns Team	11 August 2003
Josephine	Government office 2	Pharmaceutical Quality Team	13 August 2003
Martin	Government office 2	Environmental Safety Team	13 August 2003
Ron	Pharmaceutical representation company N	Secretary	18 August 2003
Drew	Pharmaceutical and feed additives representation company O	Membership Officer	21 August 2003
Stanley	Equipment company 12	Marketing Manager	26 August 2003
Giles	Equipment Company E	Company Director	29 August 2003
Lorna	Government office 7	Health and Safety Inspector	2 September 2003
Nathan	Department of Veterinary Medicine, University 9	Research Assistant	9 September 2003
Dominic	Not Applicable	Animal Rights Protester	13 September 2003
Isobel	Not Applicable	Animal Rights Protester	13 September 2003
Tobias	Not Applicable	Animal Rights Protester	13 September 2003

Harry	Government office 4	Administrator	15 September 2003
Phoebe	Animal rights group V	Campaigns Team	16 September 2003

Sample fieldwork letter: animal welfare

UNIVERSITY OF BRISTOL

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Thursday 2 January 2003

Dear Sir/Madam,

I am undertaking doctoral research at the School of Geographical Sciences, University of Bristol. My research aims to explore and understand everyday dairy farming practices. As part of my work, I am interested in animal welfare.

In your capacity of raising awareness of farm animal issues, I would very much welcome your input into my project. If you could suggest the person or department whom you think would be best placed to assist me, I would like to come and hold a preliminary interview at a convenient time, with the aim of identifying how your campaigns overlap with my research. In accordance with the Data Protection Act, you and your organisation will remain anonymous and unidentifiable at all stages of the research, including the final PhD thesis and resulting publications.

To arrange a time for our meeting or for further information about the interview or my research more generally, I can be contacted by email js0820@bristol.ac.uk, or telephone (0117)9610910 or at the above address.

I look forward to hearing from you.

Yours faithfully

Jessica Sellick.

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Everyday Dairy Farming Practices

This dissertation is interested in developing geographies of cows. While veterinary medicine has long shown interest in the prevention and cure of diseases and ailments with an emphasis placed on animal wellbeing it is only in recent years that social scientists have become interested in the social networks that result from these developments. This project seeks to contribute to these debates.

Geographers are interested in farming as a system, comprising of networks of producers and consumers. My thesis seeks to understand how these networks operate by following factors that influence approaches to animal welfare and their role in determining the conditions under which dairy cows are raised on farms.

Pulling on current theoretical debates within social science I am investigating the following themes:

1. Different understandings of the term 'animal welfare'.
2. How these understandings feed into debates concerning the ways in which farm animals are raised.
3. How a welfare campaign is organised, implemented and assessed.

This project seeks to use this information to trace how different forms of knowledge regarding animal welfare are used in different sectors, from policy making to mundane practices on farms.

This project is funded by The Economic and Social Research Council (ERSC). The ESRC is an independently funded organisation that aims to promote and support applied research and postgraduate training in the social sciences.

Animal Welfare

Themes:

- Your daily role.
- Defining animal welfare.
- Information sources of animal welfare.
- Farming methods.
- Campaigns and awareness.
- Political process.
- Future of animal welfare issues.

Interview Guide: Animal welfare

- **Your day to day role within the organisation.**

- **Understandings of the term 'animal welfare'.**
  Its linkages to terms such as 'protection', 'well-being', 'needs', 'health', and how these notion of welfare may vary according to the animal.

- **Where knowledge regarding welfare comes from.**
  Personally acquired information, role of scientific reports, and use of undercover teams.

- **The impact of different methods of farming on animal welfare.**
  The conditions under which animals are raised on farms i.e. intensive or factory led or organic and the consequences of these conditions such as the use of pharmaceuticals.

- **How you raise awareness of farm animal welfare.**
  Protests and lobbying. Is this awareness focussed on animals living on farms and/or off the farm i.e. during transport and at markets?

- **Campaigns – from the initial idea to implementation.**
  Decision making process, are campaigns connected to processes (genetic engineering), animal (cow, pig, chicken), human-animal interactions, spaces and places (policy, farm, markets, transport).

- **Their role in political processes in the U.K and E.U and their relationships with other animal welfare organisations and the farming industry.**

- **Current situation and future of animal welfare issues.**

What I am really trying to get at:

Understandings surrounding the term 'animal welfare' and where this knowledge comes from (information sources).

How this knowledge may be determined by and/or disseminated according to the species of animal and type of farming (industrial, organic).

The language that is used to describe cows and the different conditions under which they live out their lives.

What factors influence the welfare campaigns that are pursued?

How these understandings of welfare unfold into the life world of a cow, including livelihood spaces.

Doctoral research project
Animal Geographies of Cattle: bodies spaces ethics

Interview Transcript

Interviewer: Jessica

Interviewee: Miranda
Campaigns Team, Animal Welfare Organization S

Date: Monday 16 June 2003

Place Campaigns office, Animal Welfare Organization S

Tape 1 Side 1

0001 **Jessica** I've been reading some of your literature, and looking at the current campaigns on the website, and I was just wondering if we might begin, perhaps, by you telling me a little about your role within the organization.

0003 **Miranda** Well...I find out what's going on from the research and information officer, she looks through the farming press and finds information that is useful to us...My degree's in environmental biology, a bit of agriculture, biology and environmental science...basically I always intended to go into an environmental job and when this post in campaigning came up, because I was interested in animal welfare, I decided to apply...I've also been travelling round Europe lately to look at good practice on hen laying farms....our next event's the [name of agricultural event] and we'll be manning a stall the whole time about the WTO [World Trade Organization]. I mean we haven't really done that before, accessed the farming community, so it's a new direction for us. Certainly when I came into the team I thought it was very important to penetrate that sector on a campaigning level because I thought it might be successful and, surprisingly, it's been really successful. I mean we've been quite successful in getting access to shows because we're animal welfare, I mean you certainly wouldn't get any animal rights there. It tends to be quite big, respected organizations who consider animal welfare to be their priority and that aren't too radical or dramatic...so it's a new direction.

0038 [making refreshments]

0061 **Jessica** In terms of animal welfare being a priority, and I'm not sure if this is unpretentious, but I'm interested in [name of organization S] and your own understandings of this term, and how you then convey this understanding at events, like the show?

0071 **Miranda** Um...[pause] I mean it is a difficult term to define. I mean, for us, I suppose, we're talking about it in terms of quality of life...but it depends who you talk to as well. A farmer, they'll explain it in terms of mortality, productivity, whereas the public tend to see it more as a happy pig in the field...that's seen as a natural thing.

0082 **Jessica** So do you think that welfare, and public perceptions, vary according to the ways in which an animal has been reared?

0084 **Miranda** Yes, I mean certainly from a farmer's point of view a dairy cow is worth a heck of a lot more money than a broiler chicken and so in a way its welfare is factored a lot more in terms of the individual animal's welfare to the farmer. There's not generally a lot of money to be made from an individual broiler therefore farmers aren't likely to care for them the same. I mean with the public we're finding that now actually with our live exports campaign. We've noticed that people aren't that concerned about sheep going out through [name of port] and we just cannot get the numbers out like we used to in the nineties. If calves were still going through there now then we would be able to get people out there. I was talking to a lady who was there in the nineties and she said to me "oh you could hear them crying and they would look at you with their big brown eyes" and so people do seem to put human personalities onto that species...but at least that got people out there and that got the issue out in

the media. I mean now we have to train our campaigns to be quite controversial. I mean we had an advert out which was banned by London Underground but hadn't, thank god, been banned by the advertising standards agency. That was controversial, it was using scantily clad women and comparing that to broiler chickens with intensively, and ... similar characteristics, playing up on the two similarities, um...we've had to be controversial because people don't care about chickens and if you had a baby calf or a rabbit or something fluffy...so yes, I think we've had to push people a little bit more.

0126 **Jessica** So do you think, perhaps, that you have to push people more because of the connections that they might have with farm animals? So, for example, they might see cows in the fields whilst driving, but are less likely to see chickens.

0128 **Miranda** I mean people just do not know how chickens are kept. I think that they prefer to think they're happy and that kind of thing. I mean my gut feeling on this is that people have certainly got removed from where food comes from, where meat comes from...it's all from the supermarket in clingfilm and there's no connection there with what that farm animals been going through and I think that permeates through to the concept of animal welfare. I mean we have hard issues to handle with farm animals...before I've worked on anti-fur campaigns, anti-vivisection campaigns and although they've been hard, farms animals are extraordinarily difficult because they are sheer numbers. And the biggest problem, in terms of animal welfare, is animals being killed for food, and internationally too in terms of the numbers.

0152 **Jessica** May I just ask, why do you think the plight of farm animals is not recognized by the public in the same way, um perhaps, as issues surrounding fur and experimentation?

0154 **Miranda** I'm not sure really, but I think in a way people want to detach themselves from it because, in a way, if there's cruelty then they're responsible for it, eating it, whereas if it's vivisection then they can stand back a bit and say okay your laboratory is torturing an animal and that kind of thing, with meat they want to stand back and eat it without taking responsibility for it. I don't think that they have enough connections to farm animals. In our society you don't tend to go and spend time on a farm...I mean surveys we've done with children reveal that they don't even know where their yoghurt comes from and they don't make the connection. Some people try to hide or disguise these connections. I mean what about the people who only eat white meat, what about the chickens? Yes, I mean I think making people make the connection is what campaigning should be about.

0187 **Jessica** Um...in terms of your work in campaigning, I was just wondering where your knowledge of animal welfare comes from and how...you identify issues, for example, with chickens?

0193 **Miranda** Well in terms of actually getting the information in, we trawl through things, agricultural literature, but actually deciding what the major issues are and what we're going to work on is more of a policy issue that comes down from the top. And I don't really have that input. I mean at the moment we're not campaigning for silk worms or bees or anything like that, we're basically focusing on farm animals, although increasingly on

fish as well...and whether they can feel pain...I mean I went to a conference recently, and I'm a vegetarian, and I was the only vegetarian there, and so they came up and said "is salmon okay?" And I was like, "well no"...[Pause] I mean basically we're not big enough to actually fund research like that ourselves but I mean we will, occasionally, attract people in to help us with small things, but we don't fund proper PhDs or that type of research. The only direct way in which we go out and collect research was that trip around Europe. I mean we do actually do farm visits but that's not a direct part of our work.

0223 **Jessica** So do you, then, liaise with other welfare organizations, NGOs, university departments, vets, to consolidate literature reviews, farm visits and so on?

0225 **Miranda** I mean we certainly have good links with other organizations and whenever they do anything they give us a copy and we give them a copy of our stuff. Sometimes we do have collaborations with other groups. We also have an investigations unit here and at the moment we have a PhD student working with us who's tracking animal transport and visiting farms for us.

0235 **Jessica** Is this person, and the other people in the investigations unit, a volunteer?

0236 **Miranda** No, contracted.

0238 **Jessica** So once you've been given a policy issue or campaign to work on, and have the literatures and documents from research and information, what's the next stage...how does that inform what you do?

0242 **Miranda** [pause]I mean obviously we use it to advocate our overall message about free-range farming and organic farming, and we subscribe to the Soil Association standards...

0249 **Jessica** But do you think, for some farm animals, being kept indoors where it's warm and dry, where they can be looked after and monitored, might be preferable to being part of an organic or free-range system?

0254 **Miranda** I mean it's a problem, it's difficult...and I guess for us, in an ideal world, all animals would have access to the outside. But I mean you could make an argument about sheep in the fells where there's one shepherd for over a thousand sheep spread out across the fells...you know the sheep could be suffering and dying and the farmer wouldn't know anything about it. But I think we would still advocate that, in principle, and with better husbandry, it's better to keep sheep outdoors. I suppose there's just naturalness to it. And there are other arguments that we would consider could make for a better welfare system. So some breeds might not cope well with the heat so it might be better to house those indoors where the temperature can be regulated and they can be better taken care of. But in an ideal world we would advocate not using that breed at all. I think this leads to subsidies and, you know, the way in which certain ways of farming are encouraged, it's production at all costs regardless of the animals...I mean going back to my campaign on cheap food, chickens are intensively reared now and whereas people used to have it maybe once or twice a week now it's meat on the plate everyday. I mean we go to agricultural shows and try to say to people "look, the price in terms of cheap food is

low animal welfare and it's detrimental in terms of your health", it's worth lobbying supermarkets and paying extra for organic, although we're trying to bring the prices down. Ideally, we would like the organic way to rule and all the time ...I mean it is ridiculous as well, the actual mark-up that the supermarkets put on it as well. And when you think that an organic egg only costs 1.5p more to produce, we're paying much more than that for it at the supermarket.

0298 **Jessica** Um...may I ask...what do you think the relationship, and differences, are between the ways in which dairy cattle tend to be reared in the U.K and the organic, free-range, approach to farming that you are calling for?

0299 **Miranda** I mean I think the main issue is to do with cull size which is leading to all kinds of problems. I mean for your average cow today the actual metabolic strain they're under...and only lasting three lactations when it should be double that. And I mean this intensive production doesn't even make sense economically because if you look after the cow then it will last longer. I mean, if we had lower yields and kept the cow longer then you'd probably make more money that way. But then people are so obsessed with breeding from the things that produce the most, you know, and I mean when they're born they select early on as well which ones they think will produce the most milk...but cows don't last very long now.

0320 **Jessica** Accompanying your overall concern with farming system, and the concern with breeding that you just mentioned, I was just wondering, then, if you're interested in other issues relating to the welfare of beef and dairy cattle, things like reproductive technologies, cow-calf separation...and indeed whether these issues inform any of your past or current campaigns?

0323 **Miranda** Yes, I mean we are interested in these issues but because we tend to advocate the organic system we don't tend to deal with these... and of course they keep cow and calf together and the calf also has to be fed, preferably, from natural cows' milk from its mother...But again there is an issue here in terms of if you're going to separate when you do. Is it easier to do on day one before they've bonded at all? Or, is it necessary to separate them at all? I mean dairy farming can continue without separating them.

0334 **Jessica** There's a difference here, perhaps, between what you and [name of organization] might like to happen and what, in practice, might be advantageous to farmers?

0345 **Miranda** I mean if we just start with transport and the huge size of farms today...that can have a huge impact on welfare...I mean we do talk to farmers about this at the agricultural shows but we are trying to build this up...A lot of the time they listen to what we're saying but there's also a lot of misunderstandings. Certainly in terms of the WTO campaign we get their support and that's positive but they can have stereotypes and once, you know, we explain that we want an economically viable way forward in terms of animal welfare and that we want farmers to be given a fair price, which is all about explaining our position, which is why it's so important that we go to these shows. I mean certainly in terms of [name of an agricultural show in the U.K], we broke a lot of barriers up and the farming industry were certainly really surprised to see us there and they were listening to us and we were listening to them, and certainly we learnt a lot from them as well. It's in our agenda for the future to have more of a

dialogue with farmers...I mean I do get the impression, and do think, that until they found out about our WTO campaign that they thought all we were about is banning farming and that we don't see a future for farming and that's not what we're about at all...I mean as an organization we're not anti-farming at all, but we are pro organic farming. But it is difficult to get this message across in rural areas. In Wales certainly in terms of live exports it's their main income and they rely on the trade a lot and certainly they can be very aggressive. I mean the common thing that I get from talking to farmers is that they all tell me that they care about their animals and that they have to care about animals to be able to farm otherwise it's bad for business, but the impression I get is that the animals are a commodity and because they want to make money, as a way or means to make a profit...And I do find, with dairy farmers in particular, that they get upset and say "but look I really, really care about my cows", and I mean when you then ask him to estimate what number of his cows are lame or something he drastically underestimates when he might know the true number.

0392 **Jessica** So how do you think the organization is perceived by the general public?

0394 **Miranda** I mean basically we do get a lot...I mean people think we should be doing a campaign on practically everything. But I do think being an animal welfare organization we can get in places where rights groups can't. And also I think we don't scare the public as much because we're not anti-meat. You know, we are a very pragmatic organization, and we congratulate people however far they come in eating more humane meat and whatever. We don't judge people, we just give them the facts and let them make the choice. In that way we don't scare people that much, but again its hard...people say that we're almost selling out. People say to me "look, how can you want them to have a good life so that they can get killed?" And we're saying "look they have to have a humane existence because they're sentient beings", you know, everything has to be done compassionately, humanely. My feeling is that the public support our campaigns because they think it's horrendous what's happening to the animals. I mean the information that we give to them, they just think that it's awful. For example, I was at [name of a lifestyle show organized in the U.K] and a lot of people came up to me and said "oh I eat organic chicken because it's not intensively reared and I cannot believe that this is still going on" and what have you. So that's quite interesting.

0415 **Jessica** Um...when you're presented with so many issues and...welfare concerns, from the public and through the research and information team, how do you decide upon a campaign?

0416 **Miranda** I think I would say that farming systems are a priority...crates, battery cages, again how farm animals are reared that's our priority...And we tend to think of animal welfare in terms of the conditions that they are reared in...that's certainly, I think, overriding what we do. In terms of where the campaigns come from, it tends to be policy and strategy, it tends to come down from there and that consists of the chief executive, our political-legal director whose had years and years of fantastic experience...but it's a combination really. It's like looking at the picture in terms of what's happening in this country, and increasingly internationally as well, and asking ourselves what things can be achieved, what can be eliminated for animals and animal welfare.[Pause] And obviously we ask our technical accounts manager how easy a battle would be to win in terms of funding

and gathering evidence. I mean, if we look at pigs, the scientific evidence is clear cut that sow stalls are bad for them and there are good alternatives in existence so clearly we can refute arguments from the other side...and of course we can show how these alternatives will really work.

0439 **Jessica** So...is scientific evidence important to you, at the forefront of your campaigns?

0441 **Miranda** Yes and I think that's why we're so well respected in terms of what we do as well. When we go lobbying in Europe and at the House of Commons with anything we can show them the scientific evidence behind it, from a research point of view...but coming back to your question about what campaigns we pick, our remit and our mission statement is to end factory farming internationally and long distance transport...so it kind of grows from there really. I mean we are European and international now.

0448 **Jessica** Do you think that being part of the European Union has affected animal welfare?

0451 **Miranda** [Pause]... I mean Europe can be difficult in terms of what the bigger and stronger members want to do, but I mean we can actually stand up to the United States there, especially in terms of trying to get the WTO to take-up animal welfare. And, because we want them to reject intensive and inhumane systems, Europe's quite good at helping us to do that...in most of the accession countries there are mainly small, family run farms which we think is quite good. Unfortunately they are being encouraged to become more competitive and intensify, but we're doing a lot of work in those countries now...and in other countries in anticipation of them joining Europe...[Pause] we're actually doing a demo [provides a date and embassy details]...to the eastern European countries who are due to join and we'll be showing our video outside for about an hour or so. Here all the different departments link in; the political department, a big international coalition of groups...just to try to help push this message forward about factory farming and transport. I mean now we have an international development department...because interest is growing...I mean we're starting in Europe now and looking to see what's really wrong with it, but some member states are at the same stage we were many years ago so we want to get these countries now and stop them before they become like us...I mean some countries think that factory farming is the solution to all their problems. It helps that we have links to other organizations and within these countries we're finding this is perhaps the first time that they've taken animal welfare concerns on board... I mean, I hope they are beginning to realise now that factory farming doesn't feed the poor...and it doesn't make sense in terms of the environment as well.

0499 **Jessica** So with this general concern about factory farming and transport in mind, how do you then focus on particular issues, causes, animals, countries...in terms of campaigning?

0501 **Miranda** I mean at the moment pigs and sheep are our main focus because of the incredibly intensive conditions that they're kept in...I guess you could say that they are our priority...and they've been our priority since the very beginning really...I mean when we set up it was really pigs and chickens...And its because of the sheer number of animals being affected as well. I mean I think chickens have always been important...so numbers are one of the factors that we take into account...I mean you can't do

everything so we focus on a few major campaigns, and have several mini campaigns going on at the same time should the opportunity come up. I mean if a report gets released into the public domain and we can use that to make a statement then obviously we'll use that ... but really we need to focus on the key areas that need more attention. So, at the moment, we have live exports, WTO, broiler chicken industry, um...these are our three campaigns that we really, really focus on but obviously there are so many issues all the time and really we are a relatively small organisation.

0521 **Jessica** How many people work in [name of organization]?

0522 **Miranda** About thirty in the offices here, and then its kind of complicated in terms of the way everything's arranged because in some places we have people who are funded by us and in other places we have people who are there to represent us. But we are really small when compared to organizations like the RSPCA...I mean in campaigns it's myself, the campaign director and then the campaign coordinator...historically its always been about two but now we're three...and I guess with three priority campaigns, and other campaigns as well, I have to jump from one thing to another. I mean last week I was in London as the Farm Animal Welfare Council released a report. So, I mean the campaigns that we decide to run, and when they run, are kind of decided by Europe and what's going on in terms of legislation as well. I mean if there's a directive coming out on broilers then we'll be cashing in...so we do coordinate a lot of our work around politics...and when political departments expect things to be happening, and we organize events round that.

0535 **Jessica** With pigs and chickens, and other farm animals, are you concerned, then, with the...conditions in which these animals are being reared, their lives, or... how the welfare issues affecting these animals relate to your overall campaign focus on factory farming and transport?

0539 **Miranda** I mean obviously we are concerned about the way in which they are slaughtered, transported, we're concerned with every stage of it. But most campaigns happen to be on the actual rearing methods because that's to do with an animal's life and it's a huge issue that we know we could tackle...whereas with slaughter, although there are problems, at least it is short term - at the end - rather than long term suffering. [Pause]...and I think the other principle is that we want animals to have a humane, compassionate life; we just believe faith and respect, you know, we don't believe in cruel or unnecessary suffering and that is at the heart of everything that we do.

0550 **Jessica** [Pause]...So in drawing attention to the conditions in which chickens, and other farm animals, are being reared...and in terms of the welfare of those animals, what do you think, perhaps, the alternatives might be?

0552 **Miranda** Organic, definitely...although we're certainly aware that it can cause problems too in terms of drugs and those sorts of things. I mean organic is quite strict in terms of what you can and cannot use in animals and this can cause welfare problems, but generally we tend to think that... although in individual cases, it depends on the stock...we do tend to get these kinds of problems, but overall we think that organic represents the best attempt and we do that on the basis of consideration for the animal when compared to something like the battery cage...I mean even if they established that the cage was brilliant...what about the animals kept inside

them, are they going to have a happy life? I mean in a free range system, although you might get huge problems with feather pecking, cannibalism and stuff, the potential for them to have a good life is there.

0561 **Jessica** So once you've decided to co-ordinate and run a campaign on say chickens, what's the next step?

0563 **Miranda** I mean, bottom line, what is the most receptive way of getting our message out there to the general public? And that's at the back of our minds whenever we're coordinating a campaign. I mean we have to work out who the targets will be, how you're going to do it, what's your message, what's the aim of the whole campaign, what you are trying to achieve...what are we actually going to be saying in the message, and can we back that up with scientific research, are we correct in what we're saying? So yes we're basically concerned with getting it out and into the media. It's also about getting active by helping people to make informed choices about how they shop, and whatever actions they take that they take responsibility for that...and obviously that if they go and buy meat and it's not free-range or organic then they are buying something that is contributing to animal suffering. But we also have to think about what is the best way to get that message forward...but it depends what we're doing, each campaign is completely different. I mean we have to think about what would be the repercussions of saying this, or saying that, and it's about using your experience from past campaigns to achieve this. I think, with us, we have a combination of political lobbying and research behind us, and so we have very strong support...and we're very active so we would get people out there in events, empowering them, telling them what we want them to do. You know, we believe in letter writing campaigns, getting people out on stands, street collecting and that sort of thing...it's about getting out with the public and getting that message out there...it just depends what the campaign is.

0589 **Jessica** In getting your message out...can you think of any particular campaigns that you think have gone very well, been successful...and other campaigns, perhaps, where you've encountered problems?

0590 **Miranda** I mean certainly the live export campaign has been successful because since BSE the trade has virtually stopped....But I mean at the moment the government are reviewing the over thirty months rule and if they revise it...I mean exporting animals is all tied into that legislation really. But I do think if it were to start up again on a large scale there would be a huge uproar from the public because...well...it would be a red light for us... [Pause]...I mean I find from talking to people that with exports it's a product of time, an era...a time when people wanted to go down to Dover, Brighton and...they felt really passionately...and the fact that somebody died as well...and I mean that got us coverage on the national news as well...it caught the public imagination and the media really hyped that up. But I mean it did get really silly as well with people smashing windscreens, things that we would never advocate. I mean live exports had been going on since the fifties but it really took off in the nineties. But...apart from the exports, I really think our most successful campaign was the battery cages. Obviously we're not happy that the enriched cages are going to take over, and this is part of the problem really, because no matter how excited you want to get when you think you've achieved something you need to remember that things can get overturned, again the battery cage and live exports could be brought back again. But I am positive in terms of exports

because if you look at the numbers they are lower than at any other time and I certainly think that things are becoming more difficult for them, or at least we will make life more difficult for them. I'm positive on the export campaign, but whether or not it's a success is a difficult one. I mean it depends how you measure it - in terms of getting the most people fired up? That would be with live exports. But in terms of results and bringing about change on a practical level then it would be the battery cage for me. Having said that, I also think the WTO one's doing very well. You know, we're really pushing on that at the moment and that's a crucial campaign...I mean in terms of conscience we are managing to reach the public, and get farmers on board, and reaching farmers as well is a new direction for us. [Pause] I can't think of any other campaign where we've involved farmers before. I think in terms of campaigning you have to remain positive, but in terms of measuring success, it's very difficult. I mean here we're constantly evaluating and trying to learn from our mistakes, so we take things on board that have happened as well as our successes, you can never ever stop learning something about campaigning. I mean we're always trying to change people's behaviour and mind set. [Pause] um...goodness...this is a difficult one. I mean I think all our campaigns are successful in the sense that we're moving in the right direction, it's just different in terms of timescale. I mean, with the battery cages, and if enriched cages were just to replace them all over Europe, then we would see that as a major thing and we would campaign but we're still hopeful...because it's not economically viable...so we will carry on campaigning against enriched cages. I mean in some European countries they are phasing out cages altogether.

0634 **Jessica** Is there a difference here, perhaps, between what [name of organization] would like to do in terms of a campaign having a successful outcome, and what's achievable in practice...with the campaign on chickens, for example, although the battery cages are being phased out, which might be regarded as a positive, successful outcome...this needs to be situated alongside enriched cages and, therefore, your campaign is ongoing.

0635 **Miranda** Yes...I mean, to give you another example, another successful thing that we've done is to get the European Union to recognize farm animals as sentient beings. Now that can be used to stop so many things. I mean governments are always very reluctant to...what would you call it...legislate...to...push forward animals being used for trade and that they are sentient beings and not goods to be paid. So I guess that's what disappoints me in terms of exports, because animals aren't recognized as sentient beings. I mean they are in name but not in practice and that's...the way forward in terms of recognizing in law. It's so frustrating because we achieved so much with that and sometimes you feel let down, politically, with that. More could be done politically I think. I think we have given them a choice and we do think about how that will impact upon the public, farmers...so we do try to think about the repercussions. So with exports we sat down and said lets mark the trade across the continent and see how farmers could get a fair price, so rather than have live exports, have local industry in each country...I also think it's frustrating campaigning against the whole system and certain things in that system. So, say...we don't think they should tail dock piglets, if we're going out and campaigning or something like that we'll say "but the pigs welfare is going to get worse because they'll bite each others heads off" or something like that. So when you are trying to attack the whole system but attacking bits of it...I'm not sure if things are going to get any better. I

mean even when we're doing more, and we're successful...I mean all some farmers have to do is ask their vet if they have some kind of problem and then it's not necessary for them to dock a tail, and to do so would only happen in exceptional circumstances...Plus, I think the biggest problem that we've got right now is that there's hardly any legislation and what there is really weak and there's loopholes. So, I mean, you can't only work on the surface because these animals are not protected by the law, its just ridiculous.

0668 **Jessica** With legislation, the law...what do you think are the ways forward in tackling this?

0670 **Miranda** Um...[pause] we do find farmers coming up to us and saying why are you picking on us? And to a certain extent it is because it can be easier to get things changed over here and increasingly across Europe and then perhaps filter through to the rest of the world...but I mean in terms of achieving things...we're getting a lot further with Europe now. Obviously there's no point us doing things that we think we're not going to achieve, there's no point running campaigns that we know aren't going to succeed...and I mean there is always a political spin on everything that we do. I mean really we have to work towards political change and work together with government departments. We do have the respect from a lot of politicians but there's just so much to do and for such a little organization it's amazing just how much work comes out of here. At the moment I certainly feel stronger about getting young people involved, and we certainly need more support, especially because the next generation coming along might not know us. I mean our supporters tend to be quite...mature...women and most of them are fantastic, and I'm not saying that they aren't, but in terms of campaigning we are concerned about the future which is why I think we need to get younger people involved. I'm working on a university project at the moment to try to get young people more interested in animal welfare, and its about getting universities to change, changing those institutions...it's a worry, it really concerns me that young people don't seem to be getting involved in animal welfare.

0675 **Jessica** Can I ask why you think that is?

0676 **Miranda** There are so many causes, um...I don't know...that's a difficult one. People are quite lethargic I think, bombarded with issues and pleas from organizations...I mean we do a lot of work trying to get the message across in schools, because we do think animal welfare should be an issue in education. I think it can be appropriate to some lessons, to, you know, look at production and efficiency in farming...divide the nutrients up in terms of how much is used for respiration, how much meat will be produced. But the actual welfare side of it doesn't tend to be mentioned...I mean in America they have a really strong lobby of students and they are really active on welfare over there, and to organizations over there its really important for them to get young campaigners with their energy to go and get the message out there, peaceful demonstrations...and I don't really see that in events that I do over here, it's just the middle aged supporters that come along. So we've decided to start targeting different audiences now like food festivals, music events, universities and things, to try to get more younger people involved. But I also think it's about getting your message out to the right audience in the right way. I mean we do discuss quite carefully which messages we're going to take to which event.

For example, we would take WTO to The Royal Welsh Show but we would do the broiler chicken campaign at the BBC Ideal Home Exhibition as there will be many men, women, families there who buy chicken and that kind of thing. With the Welsh show [she laughs], I mean when we went they knew our name in connection to live exports, and there we had a WTO stand but I had farmers absolutely screaming at me and I hadn't even opened my mouth. So yes you have to be really careful and I stick by this, and I'll tell anyone this, I think if me and my colleague had had our live export campaign stand there then we would have been punched or something because they were so ferocious. That's the tricky one and obviously it would be suicide to take the live exports campaign there but possibly by putting the WTO there it might get these people to open their minds, and think that we're not as unreasonable as they'd imagined and that we don't fit their stereotype...I mean some of them do think that we have a vegetarian agenda and I've been to a meeting where farmers have accused us of being a bunch of vegetarians, telling us that they wont take us seriously until we tell them otherwise. I mean, they can be so dismissive, and we're taking a olive branch to them...and I mean it takes guts to go to The Royal Welsh Show and they don't try to understand us which, I must admit, I think is their flaw...I mean a lot of what we're doing, if they are good farmers, then they should believe in what we're doing...we're not trying to eliminate farming, we're just trying to make it as humane as possible...I mean we meet these farmers who tell us that they are looking after their chickens in the best way possible and that if he didn't follow feed restrictions then basically they would all die; we're saying that there's something wrong with the whole system, with the bird being used. I mean, as an organization, in the future, we want to take the government to court over this because basically the way that European legislation has been interpreted, well we don't think its totally correct. There's a statement that says an animal should not be used for farming purposes if its detrimental to its welfare, and, as far as we're concerned, the broiler chicken is not a viable animal and should not be used. So while that's not an example of a welfare campaign, and I mean the chances of us winning a judicial review are slim, it does kind of highlight the problem and it might go some way to improving things. It's stupid that we have to do that, European legislation should be implemented anyway.

0736 Tape 1 Side 2

0737 [a member of staff enters the room with an I.T query]

0790 **Jessica** So in terms of some methods of farming being detrimental to farm animals, and calling for greater legislation and the implementation of legislation, how are you getting these messages out to the public?

0794 **Miranda** I mean our most immediate form is through the supermarket...we lobby supermarkets all the time, and push for people to lobby supermarkets about how animals are reared for food, for meat, and I mean that's where people have connections with meat isn't it - at the supermarket? You know, supermarkets are so powerful now, but I also believe in consumer power as well. If consumers demanded only free-range, organic meat then I think they'd listen wouldn't they? I think supermarkets do react to supply and demand. But I mean we also try to encourage competition between the supermarkets. I mean our campaigns director has just finished her round of meetings with the supermarkets, talking to them about best practice, and we've been compiling a survey and

the results from that will be given to them. But we always encourage people in our campaigns to write to supermarkets.

0839 **Jessica** Would it be possible for you to give me some examples...an idea...of some of the best practices that you think supermarkets should aim for?

0846 **Miranda** [Pause] I mean that can be quite difficult because in some cases there are already some clearly defined standards about what is free-range, what is indoor reared; but that's one of the problems that we're having at the moment - getting supermarkets to confirm the meat being sold is free-range...I mean it's about how you define boundaries because if you've got a dairy cow outside during the day and inside at night is that free-range or not? So it is quite difficult to draw the line in terms of how you determine...I mean at the end of the day it's a business and supermarkets want people to come in and buy, but we need to empower those consumers and let them know the difference that they can make in what they purchase. I would say write to your MP and write to your supermarket. I mean I think the problem at the moment is that supermarkets see free-range and organic as very middle class... they don't even try to compete with other supermarkets on price and so they market it as something that people are prepared to pay extra for. It's confusing anyway because they tend to use words like 'farm fresh' and 'farm produce' and then on the back it says 'from caged hens'. I mean I don't know if you saw Countryfile [a weekly rural affairs television programme] recently but they did an expose on how staff working at supermarkets don't actually know how the food is produced, and they had consumers going up to them and asking "do you know if this is free-range or not?"...in some cases the staff were giving incorrect answers. We've also contacted the customer services departments of the leading supermarkets and some of the information that we've been given has been inaccurate which is really bad. I think everybody wants good farm animal welfare but when it actually comes to making a choice about what they're going to buy they'll look at the stuff on the shelf and they'll look at the price. I think consumers want to be reassured that the welfare of the animals is fine and they hope that legislation will sort everything out and then they can go and make their choices on price or quality or whatever. I think that's why we're in it for the long haul with our campaigns... and I mean we do get people getting bored of us raising the same issues. It's like with live exports, everybody seems to feel that we've been there and done that now...I hear that all the time...and then we have to go back to it. But I also find, like with banning battery cages and preventing enriched cages, that people are frustrated that we haven't been able to totally change things, or that changes take so long.

0932 **Jessica** So in terms of it taking a long time, particularly with legislative frameworks, are you trying to address this wider issue?

0935 **Miranda** We have a legal director who's our first point of contact with MPs...and he lobbies in Europe, in the U.K, and he has meetings with key people all over the world. I think he's just come back from a world trade meeting; and he meets with farming union leaders as well, informally and formally. We're constantly trying to keep that political connection going. Um [pause] I think I'd better be careful here...um...we always have to be careful of the image of the organization that we present to them, and generally we have to think before we approach them about whether the ends justify the means...we are a respectable organization and we would never want to take risks to jeopardise our links. For example, in terms of

our campaigns, we don't want to get a bunch of page 3 girls surrounding a broiler chicken because that would really damage our image...and we avoid animal rights....I mean....as an organization we don't condone the way that they necessarily do things but... I think we're progressing slowly and I think we're all pushing the boundaries a little bit more and moving with the tide, obviously you can't do the same activities that you were doing 20 years ago. I mean a lot of people campaigning for animal rights have no time for us, and that's fine, but I just don't think it's productive to get in to criticizing other groups. And, you know, we have to think about our supporters too and our supporters support us because we're a mainstream organization who want to make changes to the welfare of animals on farms. Now, if we...go against what we've traditionally done...political lobbying, you know, that kind of thing, and go into direct action, then I think we would lose a lot of support and our image would be tarnished. I mean our remit doesn't allow us to be too controversial and that's why we're here...I mean I think we have to be seen...I mean I think it's a fine line. And I think this goes back to what I was saying earlier about how we get in to places that animal rights wouldn't. I mean at the Smithfield show the National Sheep Association were moaning about us being there, but I had coffee with one of the guys there and we got chatting and I explained why we were there and our campaign and everything and he actually put a good word in for us and got us a stand at the Royal Welsh Show. I mean we wouldn't have got that without that organization putting a good word in for us, they even took some of our literature on their stand. We have to think about how we operate, and it's better to speak to these people and just kind of get them on board. We are open to different perspectives and we just tell them what we're about, we don't lecture them, we just give them the information. I think we should be proud of that because that's the way we work and I think we're effective because we're not alienating people...I mean we embrace everything, meat eaters, vegans, vegetarians...and in terms of policy this really helps us because we haven't got an animal rights agenda. Okay we're campaigning for changes in farming but we're not actually campaigning against farming. In our mission statement we're very clear about not trying to be something we're not. I mean we're not a vegetarian or vegan organization, we're just not.

1022 **Jessica** Oh...I'm aware of the time, and that you need to leave shortly, so can I ask where you think we are currently in terms of farm animal welfare and also, and particularly, what you think might happen in the future?

1026 **Miranda** In the very, very long term I think we will be successful in that farming practices are already really starting to change, that can only go on. I mean there are so may sorts of things that we look at in the past, slavery and all kinds, that seemed totally acceptable at the time but now we can't ever imagine ourselves in that situation...with factory farming this will also happen and we'll see how ridiculous it was. I'm positive to think that people can change. I mean you could think about what actually goes on and you could sit here and actually get very depressed. I get calls from supporters all the time crying on the phone – "what's happening, what can I do?" - but I truly believe that one person can do so much and I think you need to remain positive about encouraging people so that they can change, that they can eat organic meat, that they can make good decisions. I think you need to cling to that in campaigning because...I mean I see people watch our videos and they've never seen anything like it before and they get really upset and when they say to you "right, I'm never eating factory

farmed chicken again" its worth it. I mean our videos on live exports...even farmers get upset. I mean we're just trying to show how it is, it's not like we're trying to contrive...and we actively discourage what goes on and that's the shocking thing. We're not even pushing people in a certain way, we're just showing them. I also think the fact that because animal welfare is being taken so much more seriously in academic terms eventually that will filter out in terms of legislation, it's all definitely moving in the right direction. There are a lot of worried consumers out there.

1062 **Jessica** There's been some discussion in academia, that's beginning to find its way into the wider media...that suggests one solution to welfare problems is to breed, to engineer, farm animals in such a way that they have no awareness of the environments in which they are living, and no feelings, no awareness of pain, suffering. Can I ask whether you think this is a possible...potential way forward in the future?

1064 **Miranda** I can't see us ever going down that line because...I mean to a certain extent we've already gone down the line just in terms of domestication, and if you go in a broiler shed they wont run away...but I do think the idea that in the future we will have something like mindless lumps of pork, where it's not actually a pig...I don't think we could go down that route because there would be absolute uproar. What would that say about the state of humanity? Although, in another way, perhaps it is better to think that if we are going to keep farming animals it might be better if they were mindless?

1077 **Jessica** Can I just end by asking you if there's anything that we haven't covered in the interview that you thought it important to raise and for us to discuss?

1078 **Miranda** I don't think so...I mean, I'm more than happy to send you more detailed information about our campaigns...I can get that copied and post it...I've got welfare buzzing round my brain now.

1079 **Jessica** Oh, I'm, sorry about that...and thank you ever so much for finding time to meet with me, I appreciate how busy you are right now and I've found it incredibly helpful.

Appendix IX
Ethical Practices

Postgraduate Ethics Monitoring Form

University of Bristol

SCHOOL OF GEOGRAPHICAL SCIENCES

Research Ethics Monitoring Form

B: Graduate Students

Research involving humans by all academic and related Staff and Students in the School of Geographical Sciences is subject to the standards set out in the Code of Practice on Research Ethics (at http://gmb.ggy.bris.ac.uk/staff/ggatt/ethics_code.pdf).

It is a requirement that prior to the commencement of all funded and non-funded research that this form be completed and submitted to the School's Research Ethics Committee (REC). The REC will be responsible for issuing certification that the research meets acceptable ethical standards and will, if necessary, require changes to the research methodology or reporting strategy.

A copy of the research proposal which details methods and reporting strategies must be attached.

Applications to external bodies for research funding must obtain *prior* clearance from the REC.

Name: JESSICA SELLICK

Title of research project: ANIMAL GEOGRAPHIES IN DAIRY FARMING: THE LIFE CYCLE PLACES OF COWS.

Questionnaire:

		YES	NO	Action
1.	Does your research involve living human subjects?	✓		IF NO, GO TO DECLARATION AT END
2.	Does your research involve only the analysis of large, secondary and anonymised datasets?		✓	IF YES, GO TO DECLARATION AT END
3a	Will you give your informants a written summary of your research and its uses?	✓		If NO, please provide further details and go to 3b
3b	Will your give your informants a verbal summary of your research and its uses?	✓		If NO, please provide further details.
4.	Does your research involve covert surveillance (for example, participant observation)?		✓	If YES, please provide further details.
5a	Will your informants *automatically* be anonymised in your research?	✓		If NO, please provide further details and go to 5b.
5b	IF NO Will you explicitly give *all* your informants the right to remain anonymous?			If NO, why not?

6.	Will monitoring devices be used openly and only with the permission of informants?	✓		If NO, why not?
7.	Will your informants be provided with a summary of your research findings?	✓		If NO, why not?
8.	Will your research be available to informants and the general public without restrictions placed by sponsoring authorities?	✓		If NO, please provide further details.
9.	Have you considered the implications of your research intervention on your informants?	✓		Please provide full details
10.	Are there any other ethical issues arising from your research?	✓		If YES, please provide further details.

Further details

Question 9.

My research will involve investigating a range of places inhabited by cows during their lives. I will be undertaking interviews with people in some of these places. All interviews will be confidential and all interviewees anonymised ~~in the research~~ when. These issues are of particular importance ~~in~~ looking at cows in a laboratory, because of the commercially sensitive nature of the information contained therein, and to safeguard and protect the identities of those involved in such research.

Question 10.

Working with animals raises additional ethical issues. This research will therefore be undertaken in accordance with the ethical guidelines laid out by the 'Division of Animal Health and Husbandry' [School of Clinical Veterinary Medicine, University of Bristol] and the "working with animals" guidelines produced by 'The Farm Animal Welfare Council'.

Continuation sheet ~~YES~~/ NO (delete as applicable)

Declaration

I have read the School's Code of Practice on Research Ethics and believe that my research complies fully with its precepts. I will not deviate from the methodology or reporting strategy without further permission from the School's Research Ethics Committee.

Student
Signed ..... Date .....

Director of Graduate Studies
Signed ..... Date .....

Submissions without a copy of the research proposal will not be considered.

University of Bristol

SCHOOL OF GEOGRAPHICAL SCIENCES

Code of practice on research ethics

Revised version June 2001

The interaction between a researcher and the people investigated falls broadly into two categories. The respondent can be either a subject or an informant. In those areas of research where the individual, as individual, (the 'subject'), is the object of study, the potential problem of invasive techniques, invasion of privacy, and so on, is clear and *always* subject to the scrutiny of the School's Ethics Committee.

On the face of it, the case of 'mere' informants seems to present little problem, especially as it tends to involve voluntary interaction and informants can choose to withhold co-operation. In fact, however, there are more subtle ways of exerting coercion, often unintentionally. It is essential that all researchers in the School who have occasion to use informants should be aware of the ethical problems this can pose. In order to alert researchers to these dangers, the following list of precepts (based on the Code of Ethics of the American Anthropological Association) is presented:

- A researcher's paramount responsibility is to those studied. Where there is conflict of interest, they must come first. Researchers must do everything within their power to protect their informants' physical, social and psychological welfare and to honour their dignity and privacy.
- Informants or subjects must consent to the research without coercion;
- The aims and possible implications of the research should be communicated as fully as possible to informants.
- Informants should have the right to remain anonymous.
- Questions asked should not be insulting or embarrassing.
- The use of monitoring devices such as tape recorders and cameras should be open, and fully understood by the people concerned. They should be free to reject them if they wish. Results should be consonant with the informant's right to welfare, dignity and privacy.
- There should be no exploitation of informants for personal gain. Fair returns should be given them for all services.
- There is an obligation to reflect on the foreseeable repercussions of research and publication on those studied.
- The privacy and wishes of informants should at all times be respected.

- Confidential matters that could place the informant in an embarrassing, false or compromising position vis-a-vis authorities, must be handled circumspectly.
- No reports should be provided to sponsors that are not also available to the general public and, where possible, to the group studied itself, other than where this is subject to the scrutiny of the School's Ethics Committee and where full conditions of anonymity and respect for research informants are met.
- The intellectual property of others, including informants and other academics, should at all times be respected and acknowledged.
- High standards of scientific integrity with respect to the collection, analysis and representation of data are at all times to be maintained.

The onus is on the researcher to comply with these guidelines. Where there is doubt in the mind of the researcher, the proposed research project should be referred to the School's Ethics Committee. All research carried out by graduate students is subject to the ethical scrutiny of the Advisory Panel and if necessary the Panel should refer the research to the Ethics Committee.

The Ethics Committee will monitor the risks and benefits to the informant or subject. The committee is responsible for looking at critical factors such as the extent to which research could be socially or psychologically invasive or damaging. It's role is to ensure that all research in which humans are involved either as informants or subjects (carried out in the School by undergraduates, post-graduates, staff or affiliated staff in the name of the School) respects these guidelines.

The Ethics Committee consists of the Head of School, Head of Graduate Studies and the Head of Human Geography Research.

Confidentiality Agreement with the Department for Environment, Food and Rural Affairs

CONFIDENTIALITY AGREEMENT

THIS AGREEMENT is made on the _____ day of _____ 2003.

BETWEEN

1. THE SECRETARY OF STATE FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS (DEFRA)
2. _____

WHEREAS

A. The student is undertaking a research project funded by the ERSC on dairy farming in the UK and requires information on the authorisation process for veterinary medicines.

B. The student is about to undergo training with the Veterinary Medicines Directorate of the Department for Environment, Food and Rural Affairs ("the VMD") relating to the evaluation of data by the VMD -

(a) for the purposes of considering applications for approvals of veterinary medicines under the Marketing Authorisations for Veterinary Medicinal Products Regulations 1994 and

(b) for all other functions of the VMD;

C. The student will be given access to relevant information (as defined in clause 1) during the training;

IN CONSIDERATION of DEFRA's disclosure of relevant information (as defined in clause 1) to the student in connection with the training given by the VMD to the student IT IS HEREBY AGREED -

1. In this Agreement the term "relevant information" means all information or data in any form which has been obtained by or furnished to the VMD, in pursuance of the Medicines Act 1968, in pursuance of the Marketing

Authorisations for Veterinary Medicinal Products Regulations 1994, or for any other reason relating to a marketing authorisation or other matter regulated by the VMD.

2. The obligations contained in this Agreement shall not apply to information which -

   i. at the time of disclosure is within the public domain; or

   ii. after disclosure comes into the public domain other than by reason of breach of this Agreement; or

   iii. can be shown by the student to have been made available to it lawfully other than by DEFRA, its officers, employees or agents, provided that the source of such information is not then subject to any agreement or other duties relating to confidentiality.

3. The student agrees -

   i. to treat all relevant information as confidential;

   ii. not to use relevant information for any purpose other than for his or her own training by the VMD;

   iii. not to disclose, permit disclosure of or otherwise make available any relevant information to any person;

   iv. not to part with possession of any document (including a document held in electronic form) or material containing relevant information; and

   vii. to keep all relevant information (in whatever form or medium) in a safe and secure place and return all materials containing relevant information together with all copies immediately at the request of DEFRA.